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CPU

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FIRE?

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INSIDE
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44

Chassis Champions
PC Case Buyer's Guide

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Throughput Thoroughbreds
Networking Gear Buyer's Guide

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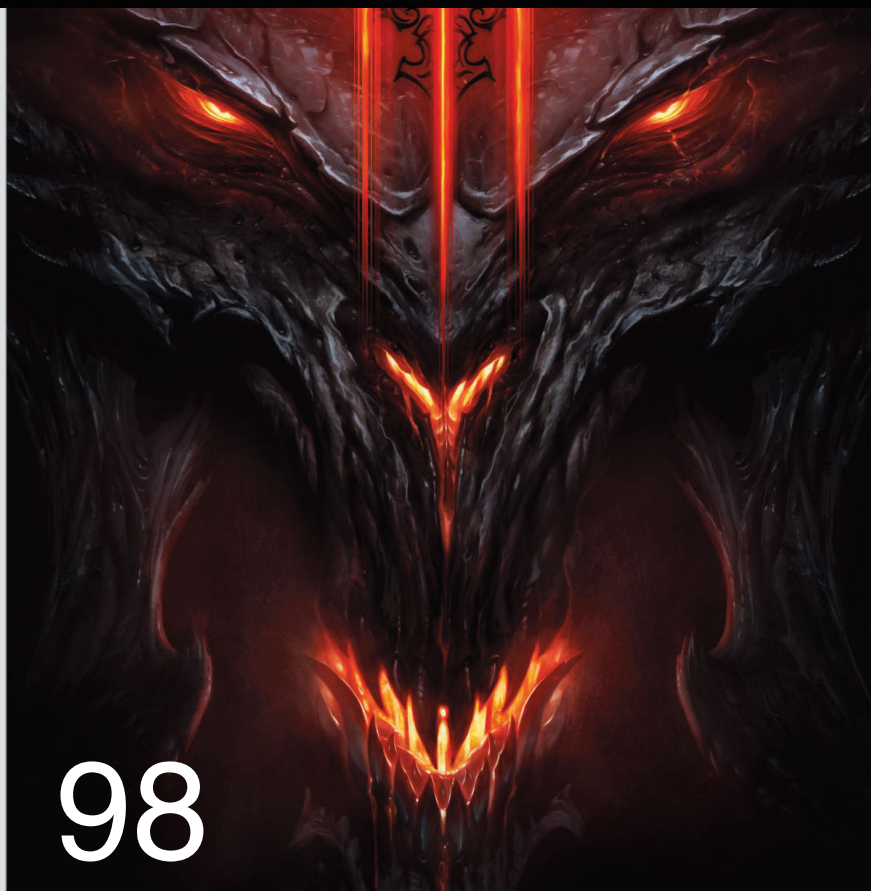
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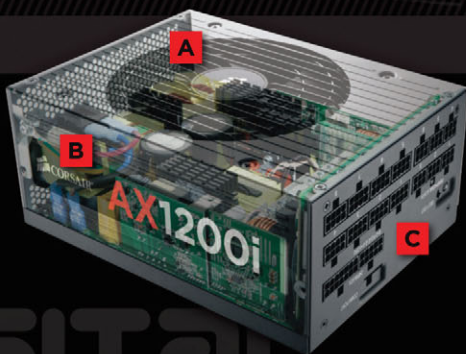
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CASES



MEMORY



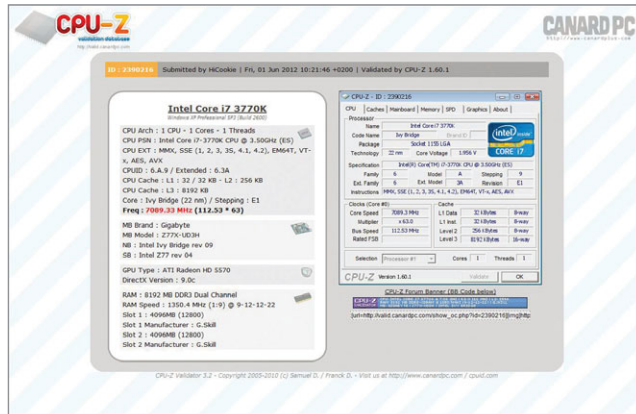
KEYBOARDS



MICE



HEADSETS



GIGABYTE Touts World Records Charted On Its Mobos

In late May, GIGABYTE announced that “renowned overclocker HiCookie” recorded the highest validated CPU clock speed (per CPU-Z and Canard PC) for Intel’s 3.5GHz Core i7 3770K. Using a GIGABYTE GA-Z77X-UD3H motherboard and liquid-nitrogen cooling, HiCookie took the Ivy Bridge chip to a clock of 7.032GHz, good enough to set a world record according to the global overclocking website HWBot.org. On June 13, however, the GIGABYTE Tech Daily blog reported that HiCookie bested his own effort by hitting 7.089GHz using the same board. Incidentally, this wasn’t HiCookie’s only record-breaking effort recently. The overclocker also topped the world’s previous highest mark for memory speed on the Ivy Bridge platform by reaching 3,280MHz on all four memory slots on GIGABYTE’s GA-Z77X-UD5H mobo using G.Skill Trident X DDR3-2800 4GB sticks. ■

Corsair Debuts Neutron SSDs, PSU With DSP-Based Design

Corsair unveiled several new products at Computex this year, including its Neutron Series SSDs and the AX1200i Digital ATX PSU, both best-of-show winners. The Neutron Series, which include flagship GTX models, use Link_A_Media Devices’ LM87800 6Gbps controller. Expected in July (pricing to come), the GTX models will hit 120, 240, and 480GB sizes and support 90,000 random read/write IOPS and 555/500MBps read/write sequential rates. The Neutron Series will include 120 and 240GB models with 90,000/85,000 random read/write IOPS and 555/370MBps read/write sequential speeds. The AX1200i, meanwhile, combines a DSP-based design with Corsair’s Link technology to support real-time temperature, current draw, and power efficiency monitoring; fan speed adjustment; and switching from a default single +12V rail config to customized multi-rail mode. Corsair also debuted the Dominator Platinum DDR3 memory line in dual- and quad-channel kits spanning 8 to 64GB sizes, reaching up to 2,800MHz frequencies, and including a customizable light bar with “user-swappable light pipe” for matching the sticks with other PC lighting and components. ■



WATCHING THE CHIPS FALL

Here is the pricing information for various AMD and Intel CPUs.

CPU	Released	Original Price	Last Month's Price	Online Retail Price*
AMD FX-8150 Black Edition Eight-Core	10/12/2011	\$245**	\$199.99	\$199.99
AMD FX-8120 Black Edition Eight-Core	10/12/2011	\$205**	\$169.99	\$169.99
AMD FX-6100 Black Edition Six-Core	10/12/2011	\$165**	\$139.99	\$139.99
AMD A8-3870K Black Edition Quad-Core	12/20/2011	\$135**	\$119.99	\$119.99
AMD A8-3850 Quad-Core	7/3/2011	\$135**	\$109.99	\$109.99
AMD FX-4100 Quad-core	10/12/2011	\$115**	\$109.99	\$109.99
AMD A6-3670K Black Edition Quad-Core	12/20/2011	\$115**	\$104.99	\$104.99
AMD A6-3650 Quad-Core	7/3/2011	\$115**	\$99.99	\$99.99
Intel Core i7-3960X Extreme Edition	11/14/2011	\$990**	\$1,029.99	\$1,029.99
Intel Core i7-990X Extreme Edition	2/14/2011	\$999**	\$1,029.99	\$1,029.99
Intel Core i7-3930K	11/14/2011	\$555**	\$589.99	\$569.99
Intel Core i7-3770K	4/23/2011	\$332**	\$349.99	\$349.99
Intel Core i7-3770	4/23/2011	\$294**	\$319.99	\$319.99
Intel Core i7-2700K	10/24/2011	\$332**	\$319.99	\$309.99
Intel Core i7-2600K	1/9/2011	\$317**	\$299.99	\$289.99
Intel Core i5-3570K	4/23/2011	\$225**	\$239.99	\$229.99
Intel Core i5-2550K	2/8/2012	\$225**	\$242.99	\$242.99
Intel Core i5-3550	4/23/2011	\$205**	\$209.99	\$209.99
Intel Core i3-2130	9/4/2011	\$138**	\$149.99	\$149.99
Intel Core i3-2120	2/20/2011	\$138**	\$124.99	\$124.99

* As of June 2012

** Manufacturer's estimated price per 1,000

Microsoft Chooses Tinseltown As Backdrop For Surface

No less than a Hollywood setting was selected for the mid-June unveiling of Surface, extremely intriguing tablets from Microsoft that the company described as “PCs built to be the ultimate stage for Windows.” Microsoft execs showed off two models featuring enticing hardware and software Microsoft alone dreamed up, designed, and engineered. Both tablets featured a 10.6-inch ClearType HD display, multiple ports (including two USB ports, Micro HDMI, and mini DisplayPort), integrated kickstand, and 3mm detachable Touch Cover offering protection and a keyboard that clicks into place when unfolded. A model running Windows RT will release first in 32 and 64GB models with an ARM processor for powering basic tasks. The other Surface model will launch 90 days later in 64GB and 128GB models with a third-generation Intel Core processor and full Windows 8 Pro installation, meaning the tablet will support heavy-duty software, including Office. Specific pricing and release information weren't released, but speculation is the Windows RT model will be ready in time for the holidays. ■



Hardware Mole



TRENDnet Gives Web Cams The Cloud Treatment

As TRENDnet points out, installing a web camera on a home or office network is fairly straightforward. Installing a web camera so that you can view video via the Internet, however, is a bit trickier processing potentially involving acquiring a Dynamic DNS service, opening router ports, and more. TRENDnet says such labor isn't required with its four new Cloud IP cameras, thanks to an installation process that automatically finds the IP cameras with a secure, free cloud service that users can log into to view video from Internet-connected devices, including Apple mobile devices via a free app. Set for September release, the cameras include the TV-IP751WC Wireless N Cloud (\$119.99), TV-IP751WIC Wireless N Day/Night Cloud (\$139.99), TV-IP851WC Wireless N PTZ Cloud Camera (\$199.99), and TV-IP851WIC PTZ Cloud Camera (\$219.99). All four offer 640 x 480 video at 20fps. The high-end PTZ Cloud Camera includes support for night vision up to 25 feet, remote 340-degree pan and 115-degree tilt, Wireless N connectivity, a wall/ceiling mount, and free software for managing up to 32 cameras. ■

Velocity Micro Brings Back “Extreme Luxury”

Been in search of “the most extreme, most refined, most powerful PC on the planet?” Well, look no further than Overdrive PC, the brand Velocity Micro purchased in 2007 and resurrected recently with the Overdrive BigBlock. GTX, which Velocity Micro states continues the Overdrive PC “ultra-performance desktop legacy” dating back to 2003. Starting at a cool \$7,999, the BigBlock.GTX is preconfigured with a six-core 3.3GHz Intel Core i7-3960X Extreme Edition that's Hyperclocked to 4.6GHz. Other goodies include an ASUS Rampage IV Extreme motherboard, 32GB of DDR3-1600MHz quad-channel memory, three 2,048MB EVGA NVIDIA GTX680 GDDR5 cards in tri-SLI, two 240GB Intel 520 Series SSDs, a 2TB Hitachi SATA 300 HD, 1,500W PSU, a Logitech G110 keyboard, and a Razer DeathAdder 3G infrared mouse. The aluminum OPC Performance Case, meanwhile, includes custom fans, aluminum wheel kit, and availability in four colors. ■



Spotify Charts New Course With Free Web Radio

Spotify let fly in early June with what could be a significant blow in the streaming music wars by launching a free web radio service for mobile listeners (U.S. support only). Initially available for Apple devices (Android support coming), the free web radio will include advertising but marks a major departure from the paid monthly plan Spotify users previously had to possess for mobile listening. In addition to the inclusion of ads, the free offering limits track skips to six per hour. (For \$9.99 per month, Spotify Premium subscribers get unlimited skips, can access auto-generated playlists based on songs they've heard via the radio service, and more.) Users can select from Recommended stations, Genre stations, or create stations by selecting an artist. This free Web radio feature puts Spotify in direct competition with Slacker, Pandora, and other web radio services with free mobile listening. In its favor, Spotify reportedly has 16 million tracks in its library vs. Pandora's 1 million. ■



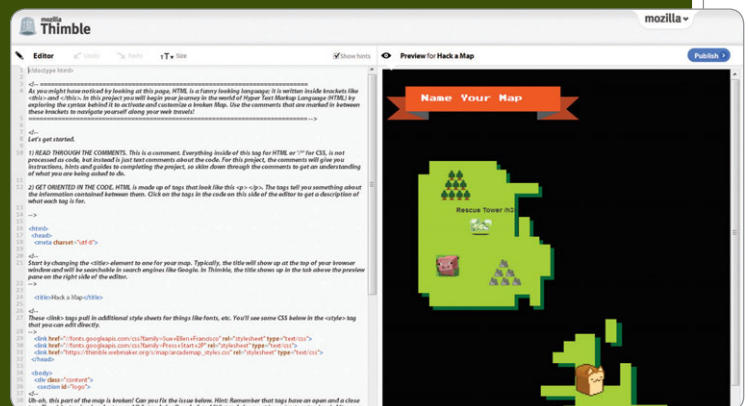
Google Threatens Conversion Sites With Lawsuits

If you're a fan of YouTubeMP3, you're not alone. The site estimates 200 million users globally use services of its kind, and bills its own as "the easiest online service for converting videos to mp3." Google apparently has a problem with that. In June it delivered cease-and-desist letters signed by Harris Cohen, YouTube associate product counsel, to YouTubeMP3 and Music Clips demanding each stop offering functionality to download YouTube content or risk legal consequences. The letter, which TorrentFreak.com posted, stated such sites violate YouTube's terms of service, which prohibits downloading any video from the site not accompanied by a download link. Further, such sites violate YouTube's API's terms of service, which prohibit applications that "separate, isolate, or modify the audio or video components" of YouTube audiovisual content provided via the API and application and that "store copies of YouTube audiovisual content." In an open letter, YouTubeMP3 stated it believes its service is legal and has never used the YouTube API "to pull any videos." YouTubeMP3 also cited Google News and Google Books as examples of Google not practicing what it preaches. ■

Software Shorts

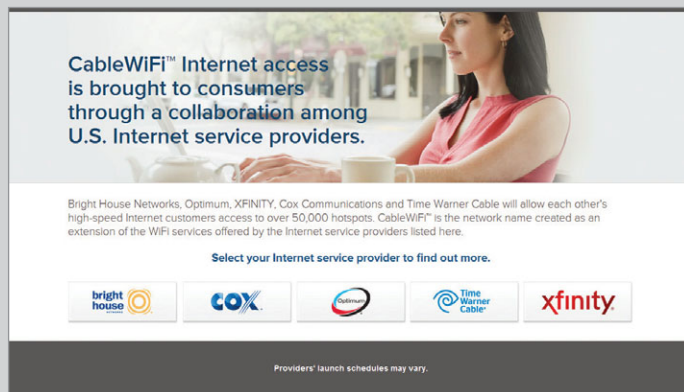
Mozilla Releases Thimble Web Page Creation Tool

How simple does Mozilla's newly released Thimble make creating fully functional web pages in just minutes? "Ridiculously simple," says Mozilla. The company says the tool bypasses learning HTML and CSS, struggling with servers to preview work, and other obstacles to make it "easier to create your own projects quickly and learn web skills in a way that's easy, visual, and fun." Beyond writing and editing HTML and CSS directly in a browser, Thimble enables sharing pages in one click. By default, Mozilla hosts the pages (which aren't indexed by search engines), though users can host them elsewhere. Thimble also doesn't support uploading video or images, but you can link those hosted elsewhere. The project includes hackable web pages dubbed Projects that help sharpen HTML and CSS skills. Overall, Thimble is the core of Mozilla's Webmaker (webmaker.org) mission to transform people "from using the web to making the web." Hundreds of Summer Code Party events are planned throughout the summer in various communities. ■



Cable Titans Collectively Tune Channels To CableWiFi

Bright House Networks, Optimum, Xfinity, Cox Communications, and Time Warner Cable united in May to create a sprawling network of outdoor and indoor Wi-Fi hotspots that subscribers can access at no extra charge. The effort enables each company's high-speed Internet customers to use their supplier's metro Wi-Fi networks and networks other suppliers operate, as well. Dubbed CableWiFi, the network includes 50,000-plus hotspots in the New York City, Los Angeles, Tampa, Orlando, and Philadelphia areas, with more hotspots to come. Subscribers log into a CableWiFi hotspot using the same credentials as with their provider's Wi-Fi network. Auto-connect support is expected soon. Cablevision executive Kristin Dolan proclaimed Wi-Fi "a superior approach to mobile data" and cable providers as "best positioned to build the highest-capacity national network" for fast and reliable Internet connections when customers are away from broadband service. ■



CableWiFi™ Internet access is brought to consumers through a collaboration among U.S. Internet service providers.

Bright House Networks, Optimum, XFINITY, Cox Communications and Time Warner Cable will allow each other's high-speed Internet customers access to over 50,000 hotspots. CableWiFi™ is the network name created as an extension of the WiFi services offered by the Internet service providers listed here.

Select your Internet service provider to find out more.

[bright house](#) [cox](#) [Optimum](#) [Time Warner Cable](#) [xfinity](#)

Providers' launch schedules may vary.

340 Trillion Trillion

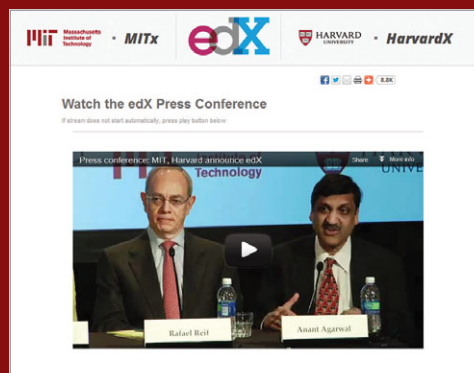
That's how many unique Internet addresses are now available thanks to IPv6, which achieved a major milestone June 6 on during World IPv6 Launch Day. IPv6's available addresses compare to the 4.3 billion that IPv4 makes possible but which will have dried up completely by 2014. On World IPv6 Day last year, roughly 1,000 companies and providers tested IPv6 for one day. This year, 3,000 websites, including Google, Facebook, Bing, Netflix, Yahoo!, and AOL, made the permanent jump to IPv6. Additionally, five home router makers officially updated their hardware to IPv6 compliance, and 65 network operators made the permanent switch, as well. As the Internet Society, which sponsored the day, pointed out, the shift to IPv6 is necessary because "every single thing on the Internet has an IP address," including notebooks, desktops, smartphones, tablets, and the scads of other gadgets that now communicate with the web. ■



Site Seeing

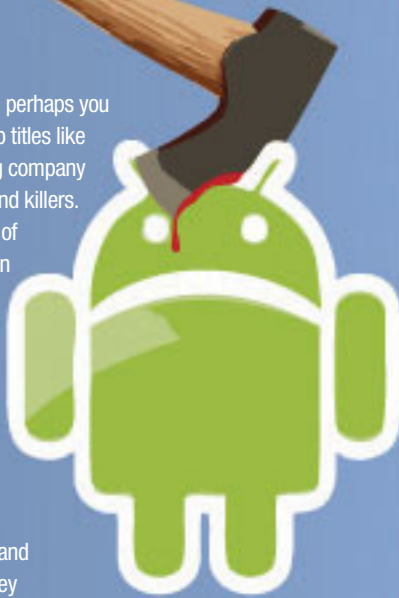
Want A Free MIT & Harvard Education? Browse To edX

Bring together the elite educational institutions that are the Massachusetts Institute of Technology and Harvard University and what do you wind up with? edX (www.edxonline.org), a \$60 million effort that both universities are equally funding to build an open-source platform that will bring free online courses to essentially anyone with an Internet connection. Anant Agarwal, MIT Computer Science and Artificial Intelligence Laboratory director and edX president, stated the goal with edX is to educate 1 billion people globally by presenting education "on a mass scale." Initial courses are to be announced this summer, with classes starting in the fall. Michael D. Smith, Harvard Faculty of Arts and Sciences dean, will lead faculty in developing edX's courses. Beyond "self-paced learning, online discussion groups, and wiki-based collaborative learning," faculty will use edX to conduct research in how best to use technology to augment the learning process, as well as teaching and learning. Ultimately, the schools will release the edX platform as open-source software to other universities and organizations. ■



Job Of The Month

Looking to be an early employee at “the next Instagram”? Or, perhaps you just want to work at a company that is cool enough to give job titles like “Android Axe Murderer.” Either way, the mobile video sharing company SocialCam is looking for a few good code-writing “pandas” and killers. The startup’s career page reads like a demented cartoon zoo of staff. They need, for instance a “Rails Scaling Panda” who can help grow a Rails-based infrastructure that already gets tens of millions of requests per day. Because “everyone knows that pandas are great at scaling,” they write. The Android Axe Murderer has to improve that platform’s version and make “our Android app epic.” Or you can be the “iOS Honey Badger” who works on a platform the company boasts has “the fastest camera open of any app in the App store.” And to pump up those animal instincts, SocialCam offers all employees gym membership, free food, and “nerf guns.” Hey, you can get free food at any hot Silicon Valley startup. But Nerf guns? That is the closer.



socialcam.com/jobs

Professionals Prefer Android Tablets To iPads

IDG surveyed 3,124 IT and business professional first-time buyers (prior to Microsoft’s Surface announcement) about which tablet they will buy in the next 12 months.

44% will buy an Android tablet	3% will buy a Windows 8 tablet
27% will buy an iPad	21% are not sure



Just Because We “Like” You Doesn’t Mean We Really Like You



With all of those thumbs-up icons peppering websites and packaging, advertisers are spending millions trying to get customer to “Like” them on Facebook. But the odds are good that this virtual popularity contest to gather social media fans is not paying off. It turns out that while 75% of the 414 18- to 29-year-olds surveyed by Appalachian State University Assistant Professor Tina McCorkindale said they had “Liked” a company on Facebook, 69% said that they rarely or ever returned to that brand’s page again. Unless a company follows up on this initial “Like” by building a real relationship with their customers with offers and persistent exchanges of value, online fandom is fleeting.

RAW Numbers: Tablet Edition

222.1 MILLION

Estimated annual shipments
of tablet devices by 2016
(IDC)

62.5%

Predicted Apple iOS share
of tablet market in 2012
(IDC)

23.6%

Percent of U.S. smartphone owners
who also use a tablet device
(comScore)

3 HOURS

Projected average time spent per month by
2014 viewing TV content on tablets
(Juniper)

How Do In-Store, Online & Mobile Purchases Compare Among U.S. Consumers?

Most Reliable

In-store purchase	69%
Online PC purchase	28%
Mobile purchase	11%

Overall Favorite

In-store purchase	31%
Online PC purchase	59%
Mobile purchase	13%

Easiest

In-store purchase	20%
Online PC purchase	68%
Mobile purchase	27%

Most Convenient

In-store purchase	13%
Online PC purchase	68%
Mobile purchase	38%

Safest

In-store purchase	77%
Online PC purchase	22%
Mobile purchase	7%

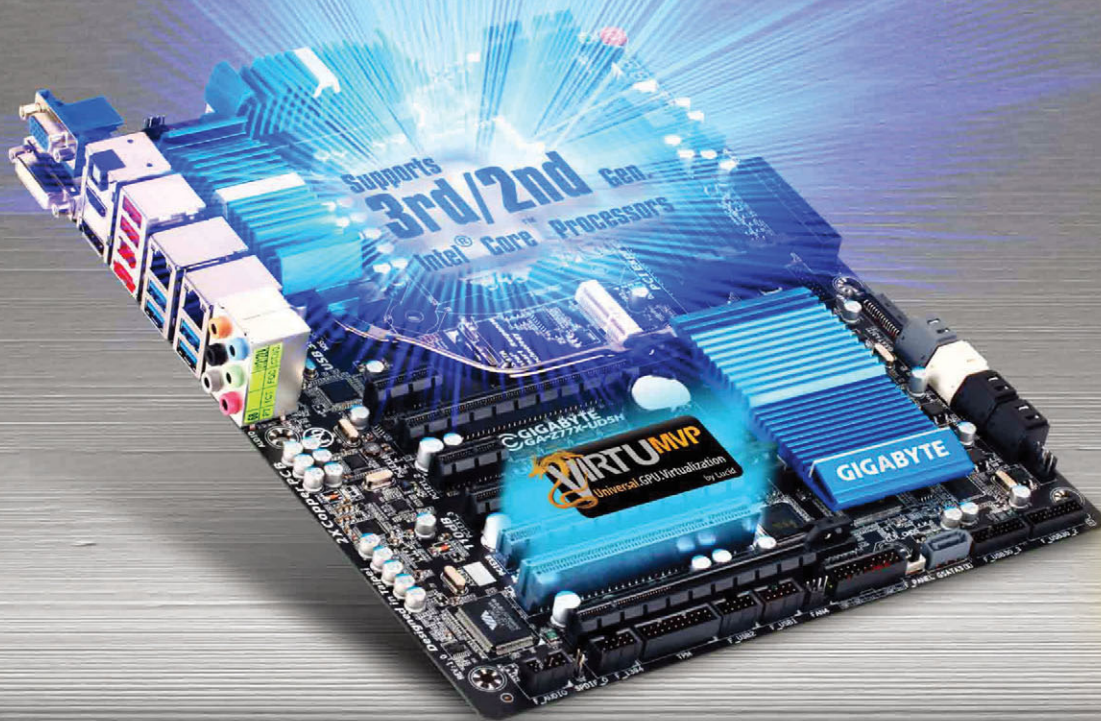


Source: Nielsen

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GIGABYTE 7 Series Ultra Durable™ Motherboards



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Integrated Intel HD Graphics Performance

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80%

Z77 + 3rd Gen. Intel® Core™ processor

Z68 + 2nd Gen. Intel® Core™ processor

3DMark Vantage
(Performance)

Discrete GPU Performance

up to
50%

Z77 + Discrete GPU + 3rd Gen. Intel® Core™ processor + Virtu MVP

Z68 + Discrete GPU + 2nd Gen. Intel® Core™ processor

3DMark Vantage
(Extreme)

Benchmarks for reference only. Results may differ according to system configuration.

*PCIe Gen. 3 & DX 11 are dependent on CPU and expansion card compatibility.
Above features may vary by model. Models may vary by region.



GA-Z77X-UD5H-WB WiFi / GA-Z77X-UD5H



GA-Z77X-UD3H



G1.Sniper M3



GA-Z77MX-D3H



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Cold War

Today's Hottest CPU Coolers Do Battle

Last fall, we examined a big selection of CPU coolers (both closed-loop liquid-coolers and heatsink-and-fan coolers) and found that they were often a big upgrade over stock coolers. (See “Keep It Cool” on page 19 in the November 2011 issue.) Since then, we’ve seen new CPU sockets from both Intel (LGA2011) and AMD (FM1), and there are many new CPU coolers on the market that are designed to give you the necessary cooling headroom to overclock the latest and greatest chips from Intel and AMD.

How We Tested

The test system for this CPU cooler roundup included an Intel Core i7-3770K (running at the stock speeds) installed in GIGABYTE’s GA-Z77X-UD5H motherboard, two ZOTAC GeForce GTX 580s in SLI, 16GB of Patriot Memory’s Viper Xtreme Division 4 running at DDR3-1600, and a 128GB Crucial RealSSD C300. To obtain the idle temperature, we let the Core i7-3770K idle for 10 minutes, which gives you an idea of the base temperatures (in Celsius) you’re likely see with each cooler. Then, we pressed the pedal to the metal on the CPU coolers by stressing the processors using Orthos, POV-Ray 3.7 Beta, and Prime95. With Orthos, we ran two instances and set the affinity to two cores each, so it put stress on each core available in the Core i7-3770K. For POV-Ray, we rendered the benchmark on all cores—three times in a row. Finally, we gathered our Prime95 temperatures by running four instances of the Small FFT’s test for 10 minutes. All temperatures are the maximum readings provided by Core Temp and are reported in Celsius.

Thermaltake Water 2.0 Pro

The Water 2.0 Pro from Thermaltake is a closed-loop liquid-cooler that comes with two 120mm PWM fans to automatically control the fans’ speed based on temperature readings from the motherboard. Thermaltake also includes adapters that allow the pump to work on Intel LGA775/1155/1156/1366/2011 sockets, as well as AMD’s AM2/2+/3/3+ and sockets.

One of the key features of the Water 2.0 Pro is the wide copper base plate that provides a large cooling surface for your processor. Thermaltake preapplies thermal compound to the copper block, so you won’t need to invest in any extra thermal paste. The Water 2.0 Pro’s pump is built into the waterblock, and Thermaltake indicates that the 12V pump’s motor is capable of operating at 2,800rpm (+/-150rpm). The two 120mm fans both feature a PWM 4-pin power connector, and Thermaltake includes a Y-cable to let both of the fans connect to the primary CPU fan header.

The installation process is similar to most of the other closed-loop CPU coolers we’ve tested. You attach the appropriate mounting bracket to the waterblock and screw it to the provided back plate. One difference from what we’ve seen in the past is that Thermaltake included a retention clip that locks the retention ring into place on the waterblock, which is handy because you no longer need to tightly press the ring against the waterblock while simultaneously trying to screw the ring to into the back plate.

In our testing, the Water 2.0 Pro produced an idle temperature of

The ease of installation and high performance make the Water 2.0 Pro an ideal CPU cooler for power users who want to overclock their systems.

Water 2.0 Pro | \$109.99

Thermaltake | www.thermaltakeusa.com



Specs: Waterblock: Copper; Radiator: Aluminum; Pump: 12V (2,800rpm motor speed); Fans: 2 120mm PWM (1,200 to 2,000rpm)

26 C, which was one of the lowest in our roundup. Under load, it delivered impressive temps of 40 C in Orthos, 57 C in POV-Ray, and 60 C in Prime95. The ease of installation and high performance make the Water 2.0 Pro an ideal CPU cooler for power users who want to overclock their systems. It provides you with the cooling headroom necessary to create impressive overlocks and the low-profile design will fit into most any case.

Zalman CNPS20LQ

Zalman's CNPS20LQ is a low-profile, closed-loop liquid-cooler that's compatible with a wide variety of Intel and AMD sockets, including Intel LGA 1155/1156/1366/2011 and AMD AM2/AM2+/AM3/AM3+/FM1. Zalman bundles a single 120mm PWM fan and includes the screws necessary to attach the radiator to an existing 120mm rear exhaust fan on your case, so it's easy to mount two fans to the radiator.

Zalman indicates that the waterblock of the CNPS20LQ is made of pure copper, with micro fins that help to effectively transfer heat to from your processor to the cooler. The malleable rubber tubing lets you to easily flex it for routing purposes. We installed the CNPS20LQ onto the rear exhaust fan in our case to increase the radiator's cooling capabilities. Similar to Thermaltake's Water 2.0 Pro, we like that Zalman provides a retention clip that locks the retention ring to the waterblock, because it simplifies the process of installing the cooler.

The fan included with the CNPS20LQ is PWM-controlled and can adjust its speed from 900 to 2,000rpm. The fan, waterblock, and radiator are branded with Zalman's logo, and if you have a blue theme in your PC, you'll like that the sides of the radiator are a dark blue, similar to the blue color found on many Intel motherboards.

The CNPS20LQ posted temps similar to Thermaltake's Water 2.0 Pro. At idle, Intel's Core i7-3770K ran at 27 C. Under load, the CNPS20LQ held CPU temperatures to 41 C in Orthos, 58 C in POV-Ray, and 60 C in Prime95. The Zalman CNPS20LQ is an ideal for anyone in the market for a closed-loop liquid-cooler who wants quiet performance and a model that can conveniently connect to a case's existing 120mm rear fan.

ARCTIC Freezer 13 Pro

ARCTIC's Freezer 13 Pro is a high-end air cooler that comes with a quiet 120mm PWM fan, as well as a 50mm radial fan (which is also PWM) at the base of the heatsink. The 50mm fan blows downward to cool the heatpipes and provide cross ventilation that helps dissipate heat from the voltage regulators and memory modules.

The Freezer 13 Pro's heatsink consists of four 8mm copper heatpipes that make a "U" shape within the aluminum fins. The 120mm fan can operate between 300 and 1,350rpm. If there's enough free space in your case, you could also invest in a spare Freezer 13 Pro fan to increase the cooling efficiency of the heatsink. This CPU cooler from ARCTIC is compatible with Intel LGA775/1155/1156/1366 sockets and AMD AM2/2+/3/3+, FM1/2, 939, and 754 sockets.

The installation of the Freezer 13 Pro is fairly quick. ARCTIC provides you with a plastic clip that you place over the socket holes in your motherboard. Then, you insert plastic pins into the clip to lock it in place. Once the clip is fastened, you just need to screw the Freezer 13 Pro heatsink into the clip. ARCTIC preapplies its MX-4 thermal compound, so you won't need to purchase thermal paste separately.

In terms of performance, the Freezer 13 Pro posted some of the best results among the air coolers in the roundup. We saw temperatures of 37 C at idle,

CNPS20LQ | \$99.99

Zalman | www.zalman.com



Specs: Waterblock: Copper; Radiator: Aluminum; Pump: 12V; Fans: 1 120mm PWM (900 to 2,000rpm)

Freezer 13 Pro | \$54.90

ARCTIC | www.arctic.ac



Specs: Heatsink materials: Copper (base, heatpipes), aluminum (fins); Fan: 1 120mm PWM (300 to 1,350rpm), 1 50mm radial PWM; Dimensions: 6.3 x 3.8 x 5.3 inches (HxWxD)

45 C in Orthos, 68 C in POV-Ray, and 70 C in Prime95. The Freezer 13 Pro's cooling prowess, combined with the cross ventilation benefits provided by the 50mm radial fan, make this an ideal for builders who want an air cooler that thinks about cooling more than the CPU.

Cooler Master Hyper 412 PWM

Cooler Master's Hyper 412 PWM features CDC (Continuous Direct Contact) technology that places the base of the four heatpipes right on top of the processor. At the base, there are no gaps between the heatpipes, which Cooler Master indicates helps to evenly distribute heat and lower the chance of hot spots on the processor. The Hyper 412 PWM works with Intel LGA775/1155/1156/1366/2011 sockets and AMD AM2/2+/3/3+ and FM1 sockets.

The Hyper 412 PWM comes with a 120mm fan that you can snap to the

aluminum fins, so you won't need to bother with any metal clips. The PWM fan can operate from 600 to 2,000rpm; at 600rpm, Cooler Master indicates the fan operates at 9dBA. A second set of plastic brackets are provided to let you attach a second 120mm to the heatsink. With the Hyper 412 PWM, Cooler Master has widened the fin gaps compared to previous generations, which is intended to reduce airflow resistance, improving cooling performance at lower fan speeds.

For quick installation, the Hyper 412 PWM comes with standoffs that attach to either the Intel or AMD back plate. A universal retention plate is included, and it features different hole positions for the various supported sockets. You'll need to adjust the pin and screw position before mounting the heatsink. Once adjusted, you can attach it to the heatsink and tighten the screws over the standoffs. Cooler Master also bundles its own thermal

With the GeminII M4, Cooler Master smartly includes a fan that's only 15mm thick. The slim, quiet fan makes for an ideal combination with the GeminII M4 in HTPCs and other cases where you want to minimize fan noise.

Hyper 412 PWM | \$49.99

Cooler Master | www.coolermaster-usa.com



Specs: Heatsink materials: Copper (heatpipes), aluminum (fins); Fan: 1 120mm PWM (600 to 2,000rpm); Dimensions: 6.3 x 3.9 x 5.2 inches (HxWxD)

ETS-T40-TB | \$39

ENERMAX | www.ecomastertek.com



Specs: Heatsink materials: Copper (heatpipes), aluminum (fins); Fan: 1 120mm PWM (800 to 1,800rpm); Dimensions: 6.3 x 3.7 x 5.5 inches (HxWxD)

GeminII M4 | \$34.99

Cooler Master | www.coolermaster-usa.com



Specs: Heatsink material: Copper (heatpipes), aluminum (fins); Fan: 1 120mm PWM (500 to 1,600rpm); Dimensions: 2.3 x 4.8 x 5.4 inches (HxWxD)

paste, which we used when testing the CPU cooler.

The Hyper 412 PWM allowed our Intel Core i7-3770K to idle at 39 C, and the CPU cooler certainly seemed to run quiet at when we were monitoring the idle temperature. Under load, we saw maximum temperatures of 53 C in Orthos, 65 C in POV-Ray, and 68 C in Prime95.

This heatsink fan combo is ideal for builders who want a system that's quiet during idle and still capable of delivering low temperatures under load. The fast, simple installation also makes it ideal for builders who want a cooler that's easy to install.

ENERMAX ETS-T40-TB

With the ETS-T40-TB, ENERMAX includes a variety of patented designs that improve heat transfer and air convection. For example, the CPU cooler's VGF (Vortex Generator Flow) technology forces air to move around

the fins located behind the heatpipes, which serves to remove heat that could otherwise be trapped in a conventional design.

The ETS-T40-TB offers universal brackets for Intel LGA775/1155/1156/1366/2011 sockets, as well as AMD AM2/2+/3/3+ and FM1 sockets. It comes with a single 120mm PWM-controlled fan that can operate between 800 and 1,800rpm. Extra clips are included if you want to install a second fan to improve heat transfer. The included fan also sports rubber vibration dampeners to prevent it from vibrating against the heatsink, reducing overall noise. The heatsink itself features four 6mm heatpipes that make direct contact with the CPU, which ENERMAX indicates helps to eliminate hot spots.

The tall ETS-T40-TB performed well in our tests. Idle temps hit a maximum of 39 C, while we saw temperatures of 47 C (Orthos), 63 C (POV-ray), and 66 C (Prime95) in our stress tests. At \$39, the ETS-T40-TB is great for overclockers on a budget

Cooler Master GeminII M4

At only 2.3 inches tall, Cooler Master's GeminII M4 is designed for use in cases where space is at a premium. For cooling efficiency, the low-profile cooler features four direct-contact heatpipes, so it quickly transfers heat to the aluminum fins for fast dissipation.

With the GeminII M4, Cooler Master smartly includes a fan that's only 15mm thick. The slim, quiet fan makes for an ideal combination with the GeminII M4 in HTPCs

and other cases where you want to minimize fan noise. The compact design also accounts for DIMM slots located near the processor socket, as the square design didn't hang over the memory area of our GA-Z77X-UD5H motherboard. The provided fan is slightly larger than the aluminum fins, and we located the overhang from the fan above the memory modules to provide some extra cooling to the memory modules nearest the CPU socket. If your system has extra-tall memory modules, you could offset the fan to the left to make space.

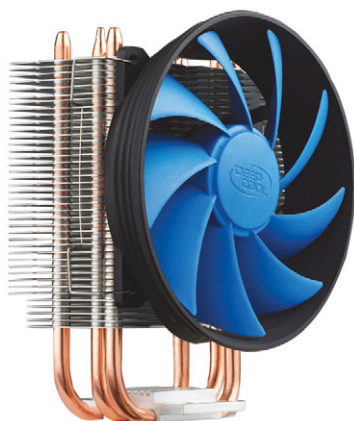
Installing the cooler involved finding the included LGA1155/1156 brackets, screwing them to the heatsink, and attaching the brackets to the Intel back plate. During testing, the GeminII M4 produced an idle temperature of 45 C. Under load, temperatures rose to 68 C when running Orthos, 78 C in POV-Ray, and 79 C in Prime95. For such a small cooler, the results are fairly impressive.

If you have an HTPC or other small form factor build, Cooler Master's GeminII M4 would be an ideal fit. It supports Intel LGA775/1155/1156/1366/2011 and AMD AM2/2+/3/3+ and FM1 sockets.

Logisys Gammaxx 300

This tall heatsink from uses vapor cycling cooling technology that helps to actively transfer heat from the aluminum fins. There's a liquid in contact with the thermal base, and when heated up, the liquid will turn into a vapor that rises and releases the heat into fins along the exterior of the

Gammaxx 300 | \$19.99
Logisys | www.logisyscomputer.com



Specs: Heatsink materials: Copper (heatpipes), aluminum fins; Fan: 1 120mm PWM (150 to 1,600rpm); Dimensions: 5.7 x 3.0 x 4.8 inches (HxWxD)

This CPU cooler is a good choice for builders looking for a quiet CPU cooler that will fit into a budget build.

heatsink. Once cool, the vapor will condense and flow back to the base of the heatpipes.

The Gammaxx 300 comes with one 120mm fan, and Logisys includes a second set of wire clips to let you attach another 120mm fan for improved cooling. The bundled 120mm Deepcool fan offers PWM controls and can run anywhere from 900 to 1,600rpm (+/-150rpm). When not under load, the fan is very quiet. At 1,600rpm, Logisys indicates the fan produces 55.5cfm at an average of 18.5 decibels. Logisys includes two universal, pushpin brackets for the Gammaxx 300. The Intel bracket supports processors that operate at up to 130 watts and can be installed onto motherboards with LGA775/1155/1156/1366 sockets. (With an optional adapter, the Gammaxx 300 is compatible with the LGA2011 socket.) The AMD bracket supports processors that operate up to 125 watts and can attach to AMD AM2/2+/3/3+ and FM1 sockets.

The affordable Gammaxx 300 posted good results in our benchmark tests. At idle, the Gammaxx 300 ran our Intel Core i7-3770K at 44 C. When running Orthos, it bumped up to 58 C. The CPU cooler maxed out at 68 C and 70 C in POV-Ray and Prime95, respectively. Considering the cost of the Gammaxx 300 and the fact it only had one fan, we found the results to be impressive. This CPU cooler is a good choice for builders looking for a quiet CPU cooler that will fit into a budget build.

Chill Out

There are a variety of good choices here in the roundup. The closed-loop CPU coolers are great for ramping up performance, while the heatsink-fan combos are ideal for specific builds, such as quiet computing or small form factor. ■

BY NATHAN LAKE

Swiftech Apogee Drive II

This waterblock from Swiftech features a 12V PWM centrifugal pump that can adjust the pump speed from 1,300 to 4,500rpm based on the CPU's temperature. The Apogee Drive II can either operate as the sole pump in a liquid-cooling system or run in tandem with an existing pump. Swiftech indicates that the pump is designed to always increase coolant flow.

The Apogee Drive II is offered in three different socket configurations: one for Intel Socket LGA1155/1156/1366, one for Intel LGA2011, as well as one for AMD's 754/939/940/AM2/AM3/770/FM1 sockets. We tested LGA1155/1156/1366 version. The retention plate built into the Apogee Drive II makes for a solid, secure connection, as Swiftech uses hollowed thumb screws that you fasten to the threaded holes in the back plate.

The copper surface of the waterblock was finely machined from C110 copper. You can adjust the position of the waterblock's inlet and outlet ports to help improve the routing of your tubing, if necessary. Swiftech includes red, green, and blue acrylic inserts that you can insert under the logo plate (which features a built-in LED) that will glow the color of the insert when the pump is running.

We installed the Apogee Drive II into a system with an existing liquid-cooling setup that included a 120mm, 2-pass double-row radiator, a Swiftech MCP655 pump, and an Intel Core i5-2500K processor clocked at 4GHz. At idle, the system ran at around 23 degrees Celsius. Under load, the Intel Core i5-2500K produced temps of 27 C in Orthos, and 37 C in POV-Ray 3.7 Beta, and 39 C degrees in Prime95.

Swiftech Apogee Drive II

Price varies (up to \$144.95) | www.swiftech.com

... offered in three
different socket
configurations ...



Benchmark Results*	Idle	Orthos	POV-Ray	Prime95
Thermaltake Water 2.0 Pro	26	40	57	60
Zalman CNPS20LQ	27	41	58	60
ARCTIC Freezer 13 Pro	37	45	62	65
Cooler Master Hyper 412 PWM	39	53	65	68
Enermax ETS-T40-TB	39	47	63	66
Cooler Master GeminII M4	45	68	78	79
Logisys Gammaxx 300	44	58	68	70

*Results in degrees Celsius

AZZA Genesis 9000

The first thing we thought about when we pulled the AZZA Genesis 9000 out of the box was the videogame Portal. The case has a clean, sleek, and white exterior (a black version is also available) with blue LED accents that reminded us of Aperture Science. But once we got over our urge to run out and play through a few test chambers, we were happy to see that the Genesis 9000 had a lot more to offer gamers and enthusiasts than looks.

The top panel features two USB 3.0 ports, two USB 2.0 ports, one eSATA port, and mic and headphone ports. This is also where you'll find the controls for the fans and LED lights. The top panel is removable, so you can gain access to the cables and two large 230mm fans just beneath it.

Speaking of fans, the Genesis 9000 has no shortage of cooling options. It includes seven total fans located at the top, bottom, side, and rear of the case. We haven't seen too many cases that include this many fans, so even the hottest-running machines should stay nice and cool. And it doesn't stop there. The Genesis 9000 has enough space to support radiators up to 480mm, so you can cool your system to your heart's content. Also, you can rotate the motherboard tray 180 degrees, which puts your graphics card(s) closer to the two large fans at the top.

It's easy to see that AZZA's goal with this case was to make installation a no-hassle affair from start to finish. The side panels are easy to remove, for quick access to components and cables. The motherboard tray has a large CPU cooler cutout and grommets for cable management. The bottom portion of the case is built to hold two power supplies (if that's your style). You can install graphics cards up to 15.7 inches long, and AZZA does more



Specs: Dimensions: 25.1 x 9.8 x 23.2 inches (HxWxD); Materials: Steel, plastic; Motherboard support: XL-ATX, E-ATX, ATX, mATX; Bays: 9 5.25-inch external, 5 2.5/3.5-inch internal; Fan: 1 120mm rear, 2 230mm top, 2 120mm side, 2 140mm bottom

than simply carve out that space inside: The Genesis 9000 has a built-in brace that helps support the weight of your graphics cards.

In terms of external and internal bays, the Genesis 9000 features a whopping nine 5.25-inch external drive slots and five 2.5/3.5-inch internal slots. AZZA also includes two Easy Swap 2.5-inch SSD slots and two Easy Swap 3.5-inch HDD slots, so you can quickly adjust them and install the storage drives you need. This particular case uses black plastic clips to hold drives. We were able to slide a drive into place and lock it with little effort, further cementing the fact that AZZA simply wants to make life easier for builders.

The AZZA Genesis 9000 is a beast of a case. It has a cool white exterior with stylish blue LED lighting, more than enough space for your motherboard and other components, and enough cooling options to keep your ice cream cold (which you'll need for the party, whether or not the cake is a lie). ■

BY JOSH COMPTON

Genesis 9000
\$169.99 (online)
AZZA
www.azzatek.com

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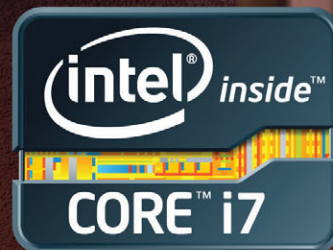
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CyberPOWER Inc.

Corsair Gaming Series GS800

Corsair recently updated its Gaming Series line of non-modular power supplies. The GS line, which used to consist of four units rated at 500, 600, 700, and 800 watts, now includes three units—the GS600, GS700, and GS800. All are 80 PLUS Bronze certified, so they're up to 85% efficient, and each comes with some nice cosmetic touches that gamers looking to spruce up the inside of their cases will appreciate.

We took a look at the top of the GS line, the GS800. This PSU has a single 12V rail, is rated for operation up to 40 degrees Celsius, and comes with all the standard safety features you'd expect (overvoltage protection, undervoltage protection, short-circuit protection, and so on). In addition, it has a nice fanless mode that kicks in during low-load usage to keep things as quiet as possible. Its 140mm double ball bearing fan is fairly quiet even when running, so one way or the other the GS800 will help you keep your system's ambient noise levels low.

The GS800 handled our tests with aplomb, posting a power factor of .98 at 647 watts, which means that it does a great job of efficiently converting the incoming alternating current to the direct current your rig's components need. Its fixed cable bundle includes everything you'll need for most PC configs, including four PCI-E connectors (6+2-pin), so you're covered if you have or plan on getting an SLI or CrossFire setup. (We tested the GS800 with a pair of GeForce GTX 580s).

Corsair retained the original GS800's tri-color LED illumination; as before, a button on the rear panel next to the power switch lets you cycle through the power supply's red, white, and blue lighting settings, or turn them off as you see fit. In addition, though, the new model comes with a blue plastic accent ring that runs around the top panel and



down into the front and rear ends of the unit. Corsair tells us that plans are in the works to offer a color accessory pack that will include interchangeable red and white color accent rings (and possibly other colors, as well) along with matching side decals, but at press time no pricing information or dates were available.

Given its power, efficiency, and adaptability to multiple color schemes, Corsair's Gaming Series GS800 is a considerable bargain at its asking price of \$129.99. ■

BY CHRIS TRUMBLE

Gaming Series GS800

\$129.99

Corsair

www.corsair.com

Specs	Corsair Gaming Series GS800
Rated continuous (W)	800 (at 40 C)
12V Rails	1
+12V max (A)	66
+5V max (A)	25
+3.3V max (A)	25
SLI/CrossFire-ready	Yes
Max wattage tested	647
Power factor tested	.98
Efficiency rating (advertised)	Up to 85%
Fan(s)	140mm
PCI-E	4
Main 12V	1
8-pin EPS 12V	1
SATA	8
4-pin Molex	8
Floppy	2
Length (incl. cable bend)	7.5 inches
Warranty	3 years

Test system specs: CPU: Intel Core i7-3770K; Motherboard: GIGABYTE GA-Z77X-UD5H WiFi; RAM: 16GB G.Skill Ripjaws DDR3-1600; GPU: GeForce GTX 580 (2x, SLI); Storage: 128GB Crucial RealSSD C300

Zalman Z11 Plus HF1

Zalman is a company perhaps best known for its CPU coolers, but we've reviewed a few of the firm's cases and came away impressed in the past, particularly with Zalman's aluminum alloy Z-Machine line. The Z11 Plus HF1 (Hell Fire 1) is a much more affordable case, constructed primarily of steel with a number of plastic accents on the side panels and all-plastic front and top panels. If this case looks familiar, that's because we reviewed the Z11 Plus in the May issue. (See page 28.)

The major difference we noticed here is the red LED fans (instead of blue). The case's pair of USB 3.0 ports route to the I/O panel of the motherboard, rather than connect to an internal board header. Happily, Zalman includes a rear expansion bracket with a grommet designed to let these cables pass through the back of the case without looking hodgepodge. Although there's not much else new about the HF1 flavor, you know what they say about stuff that ain't broke.

To recap, the Z11 Plus HF1 features a mix of matte black, glossy black, and translucent black plastic on the front and top panels. The translucent plastic does a nice job of diffusing the red light from the three 120mm fans installed in the front, top, and rear panels. The vents on the side panels are more than just decorative; each one houses a slim profile 80mm fan that cools either side of the HDD bay. The left side panel also features a large translucent piece of plastic that not only functions as a window but also raises the CPU cooler clearance by about an inch.

The interior of the Z11 Plus HF1 also offers numerous features that enthusiasts crave, including a convertible 2.5/3.5-inch storage bay for mechanical hard drives and SSDs. There are removable dust filters installed over the two vents in the bottom panel, a larger than average CPU cutout in the motherboard

tray, another 2.5-inch SSD bay on the back of the motherboard tray, cutouts along the sides and top of the motherboard tray for routing cables, and a pair of grommets liquid-cooling ports on the back panel. The HDD bays utilize antivibration rubber mounts, tool-less fastening levers, and thumbscrews so you can swap and rearrange drives without having to stick a screwdriver into the case to secure them.

For less than a hundred bucks, the Zalman Z11 Plus HF1 offers a ton of

enthusiast features, classy aesthetics, and room for the best components. If the Z11 Plus caught your eye, this is more of the same, only redder. ■

BY ANDREW LEIBMAN

Z11 Plus HF1
\$89.99 (online)
Zalman
www.zalman.com



Specs: Dimensions: 19.6 x 10.2 x 20.7 inches (HxWxD); Materials: Steel, plastic; Motherboard support: mATX, ATX; Bays: 4 5.25-inch external, 1 3.5-inch external, 5 3.5-inch internal, 1 2.5-inch internal; Fans: 1 120mm red LED front, 1 120mm red LED top, 1 120mm red LED rear, 2 80mm side

DV Nation RAMRod Powerbox

If you don't like waiting for programs to load or files to transfer and want a small form factor build, the DV Nation RAMRod Powerbox is the custom build for you. The system sent to us includes a 20GB RAMDisk that runs off of Corsair Vengeance DDR3-1600 memory (and hit around 9000MBps in some of our CrystalDiskMark tests), and there's also a 240GB OCZ RevoDrive 3 X2 to quickly load Windows and other applications that won't fit onto the RAMDisk. DV Nation designated 4GB of the system memory as RAMCache, a fast cache for the RevoDrive. For fast mass storage, this RAMRod also offers a 1.5GB RAID 0 configuration that consists of two 750GB Seagate Momentus XT hybrid drives. Another 4GB RAMCache is dedicated to the RAID setup.

For portability, DV Nation used a Lian Li PC-V354, which is designed for microATX and Mini-ITX boards. The exterior appeared similar to the stock design, except that DV Nation added two external fans to improve airflow. The fan on the back of the case helped to move heat away from the radiator connected to the rear exhaust, while the fan on the top improved ventilation for the remaining interior heat. The interior of the system was clean, and DV Nation covered all the cables in plastic, corrugated wire looms, so you won't see most of the wiring.

Airflow within the system was also impressive, as the two 120mm fans at the front of the case effectively move air over the storage devices and NVIDIA GeForce GTX 690, and the closed-loop liquid-cooler has two 120mm fans attached to the radiator, which helped DV Nation reach a healthy 4.4GHz overclock on the Intel Core i7-3820. This powerful hardware complements the RAMRod Powerbox's impressive storage subsystem.



The most exciting benchmark numbers we saw came from CrystalDiskMark. The 512KB Random Write test came in at 9097MBps, and the Sequential Write speed hit 8986MBps, both of which are roughly 20 times faster than what you'd see from a typical high-end SATA SSD. We'll also note that the 4KB random reads and writes were stellar, as well, climbing as high as 1898MBps (4KB Random Read QD32). Frame rates in games were also solid, with 59.9fps in Aliens vs. Predator and 38.67fps in Metro 2033.

The RAMRod Powerbox certainly maximizes performance with this small form factor build. As such, this system is perfect for those who need a performance workstation or high-end audio/video editing system that can fit into tight spaces. The portable design also gives you the freedom to move the RAMRod Powerbox around, if you need to take it to a different work area . . . or to a LAN party. ■

BY NATHAN LAKE

RAMRod Powerbox

\$4,663 (as tested)

DV Nation

www.dvnation.com

Specs: CPU: Intel Core i7-3820 @ 4.4GHz; Motherboard: ASRock X79 Xtreme 4; GPU: NVIDIA GeForce GTX 690; RAM: 32GB Corsair Vengeance DDR3-1600; Storage: 240GB OCZ RevoDrive 3 X2, 1.5TB Seagate Barracuda (2x, RAID 0); Optical Drive: Plextor PX-L890SA; OS: Windows 7 Home Professional (64-bit)

Benchmark Results	DV Nation RAMRod Powerbox
3DMark 11 Extreme	
Overall	X5782
Graphics Score	5538
Physics Score	10057
Combined Score	5399
Graphics Test 1	28.88
Graphics Test 2	28.84
Graphics Test 3	26.59
Graphics Test 4	16.89
Physics Test	31.93
Combined Test	25.11
PCMark 7	
Overall	5791
Productivity	6528
Creativity	5967
Entertainment	6376
Computation	5864
System Storage	6415
SiSoft Sandra 2012 SP1 Lite	
Processor Arithmetic	
Dhrystone SSE4.2 (GIPS)	151
Whetstone iSSE3 (GFLOPS)	108
Processor Multi-Media	
x16 Multi-Media Integer iAVX (Mpixels per second)	264
x16 Multi-Media Float iAVX (Mpixels per second)	359
x8 Multi-Media Double iAVX (Mpixels per second)	203
Media Transcode	
Transcode WMV (MBps)	1180
Transcode H264 (MBps)	1150
Physical Disk	
Read Performance (MBps)	5,740
Cinebench 11.5	
CPU*	8.51
POV-Ray 3.7 Beta**	1464.79
CrystalDiskMark 3.0.1 (MBps)	
Sequential Read	8470
Sequential Write	8986
512KB Random Read	8146
512KB Random Write	9097
4KB Random Read QD1	1770
4KB Random Write QD1	1342
4KB Random Read QD32	1898
4KB Random Write QD32	1542
Unigine Heaven 3.0 (1,920 x 1,200)	
FPS	77.9
Score	1962
Aliens vs. Predator (4XAA, 16XAF)	59.9
Metro 2033 (4XAA, 16XAF)	38.67
* points	
** pixels per second	
Games tested at 2,560 x 1,600.	



OCZ Vertex 4 256GB

Recently updated with an important version 1.4 firmware, the Vertex 4 marks the high-water line in OCZ's SSD performance and a validation of the company's acquisition of Indilinx. For a long time, Indilinx was the competitor to SandForce, which had supplied the majority of OCZ's drive controllers since 2010. The Vertex 4 is OCZ's second spin with Indilinx, and the results don't disappoint.

Our test results are right in line with other models we've examined recently, and in many cases, the Vertex 4 surpasses them. Considering that CrystalDiskMark reported a sequential write score of 467.7MBps, we couldn't be happier with this 6Gbps SATA drive.

Beyond throughput, OCZ packs in several other notables. Vertex 4's MTBF is an enterprise-class 2 million hours. Of course, 2 million hours is highly relative, depending on the workload, which is why algorithm advances in ECC, signal processing, and compression-free reduced write amplification are very important,

especially in business environments. OCZ wraps up most of these life-extending improvements under the name Ndurance 2.0. All told, Ndurance is supposed to double the NAND media's expected number of program/erase cycles.

The Vertex 4 family uses MLC NAND based on a 25nm process. You'll also find a pair of Micron chips supplying 512MB of cache each, which is a bonus, because SandForce products typically pulled cache from the main NAND pool, reducing total capacity.

In another nod to business buyers, OCZ also incorporates 256-bit AES encryption. For those with a supporting BIOS, this will allow for complete drive security and a way to instantly wipe the drive when it's time to upgrade with no worries about residual data recovery. The five-year warranty rocks, too. All told, the Vertex 4 is a stellar SSD and a worthy asset to any performance-oriented system. ■

BY WILLIAM VAN WINKLE

Vertex 4 256GB

\$239.99 (online)

OCZ

www.ocztechnology.com

Benchmark Results*

OCZ Vertex 4
256GB

CrystalDiskMark 3.0.1 (Default)

Sequential read	413.4
Sequential write	467.7
512KB read	393.8
512KB write	467.7
4K random read QD1	29.96
4K random write QD1	105.5
4K random read QD32	349.3
4K random write QD32	344.4

CrystalDiskMark 3.0.1 (All 0x00 (0 Fill))

Sequential read	503.2
Sequential write	467.4
512KB read	311.5
512KB write	467.8
4K random read QD1	29.85
4K random write QD1	105.6
4K random read QD32	349.1
4K random write QD32	344

AS-SSD

Sequential read	460.85
Sequential write	454.05
4K read	26.28
4K write	72.02
4K-64Thrd read	333.52
4K-64Thrd write	306.27

*Results in MBps.

Specs: Maximum sequential read/write: 560/510MBps; Random 4K read/write: 90,000/85,000 IOPS; Interface: 6Gbps SATA; 5-year warranty

Test System Specs: CPU: Intel Core i7-2600K; Motherboard: Intel DP67BG; RAM: 8GB AMD Performance Edition DDR3-1600; Storage: 240GB Patriot Wildfire; OS: Windows 7 Professional 64-Bit

ZOTAC GeForce GTX 670 AMP! Edition

Can't get your hands on the GeForce GTX 680? Don't fret, the GeForce GTX 670 is NVIDIA's next best thing, and it delivers impressive gaming performance without inducing sticker shock. ZOTAC sent us its GeForce GTX 670 AMP! Edition to use in the LAN Party Boxster for the July issue (see page 40), but before we give away the Boxster to a lucky QuakeCon attendee, we couldn't resist the urge to put it through its paces.

This card's GPU packs 3.5 billion transistors and features seven out of eight SMX (Streaming Multiprocessor) units fully enabled, for a total of 1,344 stream processors, just 192 fewer than that of the GeForce GTX 680's GPU. There are 112 texture units, and 32 ROPs, the latter matching the GTX 680's total. The stock base and boost clocks on this card are 915MHz and 980MHz, respectively. ZOTAC decided it could do better and raised the clocks to 1,098MHz (base) and 1,176MHz (boost). The memory subsystem on the 680 was effectively grafted onto the GTX 670, unchanged: There are 2GB of GDDR5 running on a 256-bit memory bus. ZOTAC overclocked the memory from 1,502MHz to 1,652MHz.

The open-air cooler on ZOTAC's GTX 670 AMP! Edition diverges significantly from the short PCB and enclosed cooler of the stock card. Here, there are two fans surrounded by a flat black aluminum shield that's interested less in directing air than it is keeping wires from getting gobbled. A large heatsink threaded with several copper heatpipes do the major cooling on this card. Although it'll contribute extra heat

to the overall system temperatures, chances are you won't install this card in your small form factor workstation anyway.

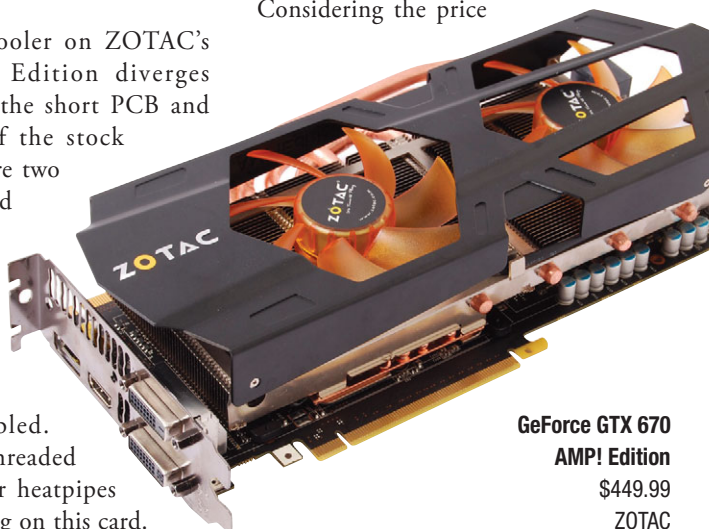
For the extra horsepower this card supplies, you have to pay a slight premium at the pump. ZOTAC recommends a 600W power supply for the GTX 670 AMP! Edition, slightly more than what NVIDIA specifies as the minimum required PSU (500W) for the stock GTX 670. The back panel features two DVI ports (one DVI-D and DVI-I each), a full-sized HDMI port, and a full-sized DisplayPort. In the box you'll find a three-day game pass for TrackMania 2 Canyon, a DVI-to-VGA adapter, two 6-pin PCI-E power adapters, user's manual, and the driver disc.

In the benchmarks, ZOTAC's overclocked GTX 670 performed admirably against the more expensive Radeon HD 7970. ZOTAC's card scored 9428 in 3DMark 11, and AMD's flagship scored 8060. In Unigine Heaven, the 670 AMP! scored 51.3fps, while the 7970 posted 42.7fps. Of the real-world benchmarks we ran, Just Cause 2 was the only one that ZOTAC's card won, though it wins at both resolutions.

Considering the price

discrepancy, ZOTAC has a very strong performer on its hands. Better yet, we were able to find this card for sale as we went to press. ■

BY ANDREW LEIBMAN



**GeForce GTX 670
AMP! Edition**
\$449.99
ZOTAC

www.zotacusa.com

Specs & Scores	ZOTAC GeForce GTX 670 AMP! Edition
Price	\$449.99
Core clock	1,097MHz (1,176MHz Boost)
Memory clock	1,652MHz
Memory interface	256-bit
Memory	2GB GDDR5
3DMark 11 Performance	
Overall	P9428
Graphics Score	9648
Physics Score	9582
Combined Score	7891
Graphics Test 1	45.11
Graphics Test 2	45.16
Graphics Test 3	58.34
Graphics Test 4	29.49
Physics Test	30.42
Combined Test	36.7
Unigine Heaven	
FPS	51.3
Score	1293
Games	
1,920 x 1,200	
Metro 2033 (4X MSAA, 16XAF)	42.33
Just Cause 2 (8XAA, 16XAF)	123.22
Aliens vs. Predator (4XAA, 16XAF)	56
2,560 x 1,600	
Metro 2033 (4X MSAA, 16XAF)	26.67
Just Cause 2 (8XAA, 16XAF)	79.75
Aliens vs. Predator (4XAA, 16XAF)	34.4
Driver: ForceWare 301.42 & Catalyst 12.3	
Test system specs: Processor: Intel Core i7-3820X Extreme Edition; Motherboard: ASUS P9X79 Deluxe; RAM: Patriot Division 4 Viper Xtreme DDR3-1866; Storage: 240GB OCZ Vertex 3; PSU: Antec High Current Pro 1,200W; Display: Dell 3007WFP	

Love at first sight



Level 10 **GT**
Driving Inspiration

Snow Edition

Don't let the good look fool you. Level 10 GT – Snow Edition is a streamlined computer case engineered to accelerate cooling and offers full suite of technical features that redefines the definition of performance PC. Three oversized 200mm ColorShift fans and one 140mm TurboFan ensure your high-end graphic cards, CPU and hard drives are all quietly cooled. The keyword is "quietly". All intake fans come with built-in filter that can be easily cleaned without the use of any type of tools. Plug&Play side panel fan, 240mm high-efficiency water cooling radiator support and much more, to find out, visit us at www.thermaltakeusa.com. Are you in love yet?



facebook.com/ThermaltakeInc



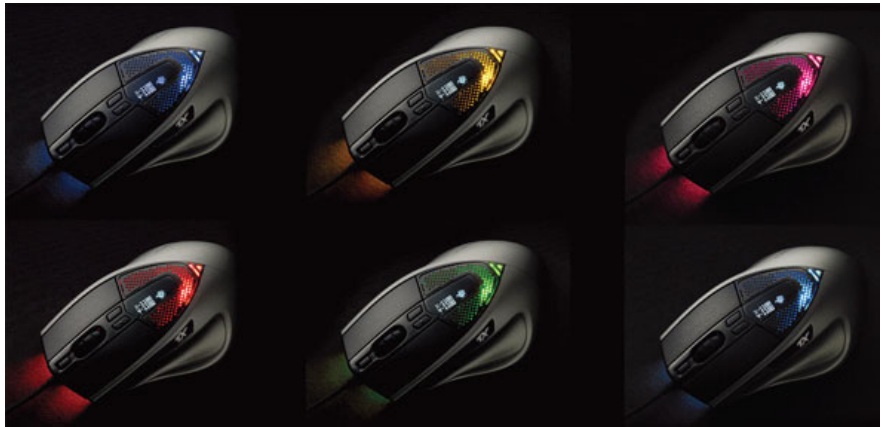
Cooler Master CM Storm Sentinel Advance II

If you could design your own gaming mouse, where would you start?

You'd probably choose a comfortable shape, because you'll be spending lots of time using it. Once you know your hand will be pampered, you'd probably want to make sure that the mouse's surface was covered with some sort of non-slip material so that you are always firmly in control, no matter what. You'd then want to make sure that your gaming mouse was capable of providing you with pinpoint accuracy, maybe with DPI settings that you could adjust quickly and easily on the fly from 200 to 8,200dpi. You'd add plenty of programmable buttons (say, maybe, eight) and an easy-to-manage profile system that you could use to set up control sets for your favorite games, and you'd build in a scroll wheel with a solid stepping motion so you could quickly and accurately change weapons when every second matters.

Once you had all of these things squared away, you'd be ready to design a good look for your mouse. A dark outer shell would make sense, but you might want to spice things up a little with LED accents. Maybe you'd design LED controls in your mouse's setup app to allow you to choose from among seven colors, and if you were really feeling frisky, you might build in the ability to make those lights pulse or flash. You'd want to add a cord, naturally, and you'd probably pick a high-quality, braided cord so that it will never tangle or bind.

At that point, it's fair to say you'd have a pretty good gaming mouse, right? What if you went beyond all of that and added an insane amount of configuration settings—settings to let you adjust details such as your mouse's USB polling rate, button response times (with specific response times for each button, if you want), and double-click speed? You might even add the ability to program control macros and scripts into your mouse via an easy-to-use software



interface and then give your mouse 128KB of onboard memory to store said programs.

You could probably do all of this, provided you know where to get all the parts and how to put them together without soldering your finger to the PCB, but it would cost you a pretty hefty chunk of cash and it would take a lot. Of. Time.

Or, you could pick up a CM Storm Sentinel Advance II from Cooler Master

for less than 60 bucks and have it running your favorite games in the time it takes to tear open the box. ■

BY CHRIS TRUMBLE

CM Storm Sentinel Advance II

\$59.99

Cooler Master

www.coolermaster-usa.com

Specs: Sensor: 8,200dpi Avago ADNS-9800 Laser Sensor; Maximum tracking speed: 150ips; Response time: 1,000 to 125Hz (1 to 8ms) user-configurable; Interface: USB



Antec ISK110 VESA

Small form factor computing has come a long way in the last several years, with Mini-ITX motherboards featuring USB 3.0 ports, 6-channel or better audio, and support for enthusiast CPUs and PCI-E graphics cards. SFF cases, on the other hand, have more or less lagged. Antec sent us its ISK110 VESA, a Mini-ITX case that goes a long way toward changing our minds.

This case is amazingly small, measuring just 8.7 x 3.1 x 8.4 inches (HxWxD). If you're the type who would rather have the computer completely out of sight, then you'll appreciate the VESA mounting bracket that Antec bundled in. You can mount the bracket onto the back of a TV or monitor to get it completely out of the way. According to Antec, this case is ideal for corporate builds, kiosks, and digital signage, but we can also see this system working well in entertainment centers for HTPCs.

If you're more inclined to show off your PCs (like we are), then you'll be glad Antec included a stand, which is

angled slightly back to give the case a proud stance. Four rubber feet make sure you won't scratch up the surface of your desk or TV stand. The fully assembled case feels incredibly sturdy, and its industrial aesthetic will look just as attractive beside to your TV or near your monitor. The case features a steel inner frame surrounded on three sides by plastic panels, the front of which is silver. The front panel sports a power button, power and HDD LEDs, mic and line out jacks, and a quartet of USB 2.0 ports. The top panel consists of a plastic frame and a large metal mesh vent designed to help with cooling such crowded parts. Under the motherboard tray, you'll find a bracket that supports a pair of 2.5-inch SSDs or hard drives.

The top edge of the case features an internal DC-DC power converter, which connects to an external 90-watt notebook-style power supply. In addition to the 24-pin motherboard power connector, the internal cable bundle consists of a pair of SATA power connectors, a 4-pin CPU power

connector, and a lone 4-pin Molex connector. That's not enough juice to run a discrete graphics card with much gaming ability, but any modern Intel or AMD CPU with integrated graphics will be more than adequate for most general computing tasks.

The ISK110 VESA is another example of Antec's solid craftsmanship, and we're happy to call this one of the better Mini-ITX cases we've ever tested. If small is your thing, then the ISK110 VESA should be on your short list. ■

BY ANDREW LEIBMAN

ISK110 VESA

\$94.95

Antec

www.antec.com

Specs: Dimensions: 8.7 x 3.1 x 8.4 inches (HxWxD); Materials: Steel, plastic, metal mesh; Motherboard support: Mini-ITX, Bays: 2 2.5-inch internal; 90-watt power supply; VESA mount; upright stand



Cooler Master CM Storm QuickFire Pro

From a purely aesthetic point of view, Cooler Master's CM Storm QuickFire Pro mechanical gaming keyboard is sleek, with a matte black exterior, striking red LED backlighting, and Cooler Master's signature font emblazoned on every key. And although the LED backlighting could be seen as an aesthetic feature, as well, it also adds to the keyboard's overall functionality.

In fact, one of the first things we tried out when we plugged in the CM Storm QuickFire Pro was its set of three adjustable backlight modes—Gaming Cluster, Extended Gaming Cluster, and Extended Gaming Cluster (Breathing). Gaming Cluster lights up the WASD and arrow keys; Extended Gaming Cluster adds even more; and the “breathing” mode makes the backlighting brighten and dim in a rhythmic fashion. Cooler Master's approach to the keyboard's backlighting gives gamers quick reference and access to the exact keys they need.

Cooler Master also added a variety of other features designed specifically for gamers; most of them are tied to the Function Lock key, which you should familiarize yourself with right away. This key lets you to change the backlighting mode, disable Windows keys, switch between 6N Key mode or Full N Key rollover mode, and access the multimedia playback keys and volume controls. The Function Lock key also lets you adjust the USB polling rate of the keyboard, giving you the options of 125Hz (8ms), 250Hz (4ms), 500Hz (2ms), or 1,000Hz (1ms). With all of these features, it's simple to tune the keyboard to your specific needs.

There's no doubt that the QuickFire Pro packs a punch in the design and feature categories, but it's also a solidly built mechanical keyboard with highly responsive Cherry MX keyswitches. (The model we reviewed used Cherry MX Browns, but Cooler Master also offers Black, Blue, or Red keyswitches in certain regions.) It provides that satisfying “click” response mechanical

keyboard enthusiasts have grown to love without being too loud.

Going back to the QuickFire Pro's design, we quickly noticed how durable and well put together it feels. The keyboard has quite a bit of weight to it. The braided USB 2.0 cable is also detachable, which adds to its mobility.

Everything about the CM Storm QuickFire Pro is designed to give gamers and enthusiasts the best possible experience without getting in the way of it. We enjoyed the amount of customization options Cooler Master built into this keyboard and we think you'll take advantage of the multiple backlighting modes to illuminate the keys you need during intense gaming sessions. ■

BY JOSH COMPTON

CM Storm QuickFire Pro

\$99.99

Cooler Master

www.coolermaster-usa.com

Specs: Interface: USB; Cherry MX Brown mechanical keyswitches; 6-key and N-key rollover; Three LED backlight modes; Adjustable USB polling rates



RESHAPING THE PC LANDSCAPE, ONE PART AT A TIME

www.fractal-design.com

FRACTAL DESIGN

A GREAT-LOOKING PC USED TO MEAN AN enormous, highly detailed case with lots of dramatic angles and flashing neon lights. Lately, though, you may have noticed a shift towards a cleaner, more understated look, with smooth panels and a few well-placed accents.

PC builders and modders everywhere are helping to shape the new cool in PC aesthetics, but what you may not know is that Fractal Design, a company founded in Sweden, is leading the charge.

Fractal Design has been in the North American market for a little less than two years, but the company's minimalist, functional Scandinavian design influence has already had a huge impact on the way you look at cases, case fans, and power supplies.

Smooth lines, subtle textures, and deft use of black and white are all hallmarks of Fractal's product lines, and looks are only the beginning.

Fractal Design's PC cases and components are also built to last from the highest-quality materials and designed with you, the PC builder, in mind. All Fractal employees have experience in building their own PCs, and each and every feature of every Fractal product begins with the question "How can we make this better?"



The company also takes user feedback incredibly seriously and goes to unprecedented lengths to incorporate the features that you care about into its designs.

Best of all, Fractal Design's products are surprisingly affordable and backed by impeccable customer service, ensuring that

you get amazing parts and real support after the sale, all without spending more than you should.

If you're ready to take your PC to the next level, you owe it to yourself to take a look at Fractal Design today. ■

HARD HAT AREA
PC MODDER
MAD READER MOD



42-174



Give Us Your Mod

Have a computer mod that will bring tears to our eyes?

Email photos and a description to madreadermod@cpumag.com.

If we include your system in our "Mad Reader Mod" section, we'll send you \$1,500 and a one-year subscription to *CPU*.

42-174

Looking at 42-174, this month's Mad Reader Mod, you probably won't be surprised to learn that its creator, Mike "ikem" Henry, is a third-generation firefighter.

"My grandfather, aunt, and father were/are all firefighters," he says, "and I have been on the Iowa Falls Fire Department for five years now."

Henry says he built this mod in honor of his family's tradition of service; he couldn't choose between modeling it after a modern fire truck or a vintage one, so he says he incorporated elements of both. He ordered the side panel latches and the front panel's door handle from a vendor that supplies parts to fire truck manufacturers, modded the left side panel's hinges so that it swings out like the compartment doors on a fire truck, and built his own diamond plate panels for use inside and on top of the case.

As you can see from the shot in front of one of his department's trucks (truck 42-174, to be precise), Henry matched the truck's paint with his Fire Engine Red powder coat, added a gold leaf accent line with black trim, and put an authentic Iowa Falls Fire Department patch on the front door panel. To carry the theme even further, Henry used yellow heat shrink over the system's exposed watercooling tubing and chose memory with red and blue flashing LEDs.

In addition to such big, eye-grabbing items, Henry individually sleeved all of the rig's power cables, added a glass side panel window, and polished and painted the GPU heatsinks and shrouds.

The PC part of this PC starts with AMD's Phenom II X6 1090T nestled into an ASUS Crosshair V Formula AM3+ board, plus 8GB of Crucial Ballistix Tracer 1,600MHz memory, a brace of 1GB Radeon HD 6870s in CrossFire, and a 64GB Crucial M4 SSD, all powered by a Seasonic X750 Gold PSU. The case is a Lian Li PC-7F, and Henry's cooling loop is based on an EK Supreme HF waterblock and an XSPC EX240 dual-fan radiator.

Henry spent about four months creating 42-174, including a month of planning and about three months of work in a spare room in his apartment. (We're going to go ahead and call it his Modding Room.) He says 42-174 is his third project and that he enjoys looking at other people's mods for inspiration and to get ideas for new techniques. Another of Henry's hobbies, working on cars, played a big role in developing his metalworking and wire management skills.

Looks like spending lots of hours around fire trucks didn't hurt, either. ■



Rosewill RHTS-8206

Vibrating Headset

Gaming Device Features Built-In Subwoofer

As gamers look for new ways to more fully immerse themselves in their games, they've had the option of turning to vibrating headsets over the past several years. With the attached microphone, these headsets are great for interactive online gaming. Finding that right combination of comfort and features has been difficult, though.

A new gaming headset from Rosewill, the RHTS-8206, hopes to find that

Rosewill®

sweet spot. It includes a control module that allows the gamer to use one of two settings for the intensity of the vibration, which gives it an interesting feature vs. many other vibrating headset options. It

also has design features aimed at keeping the user as comfortable as possible.

"We wanted something that was modern and stylish," says Brian L. Chan, product specialist for Rosewill. "That's the direction we want the company to go to."

Sweating The Details

Chan says the RHTS-8206 sprung from Rosewill's design and engineering teams' desire to perfect the concept of headphones

Control Module

The control module for the headset is connected to the cable between the USB connector and the headphones, and allows you to control various aspects of the unit's performance. Chan says the method by which the RHTS-8206 determines when to create the vibration is a bit like how a force-feedback gaming controller determines when to vibrate.

"There's no special coding required," Chan says. "The headset accepts the audio feed, and the vibration goes off the audio frequency."

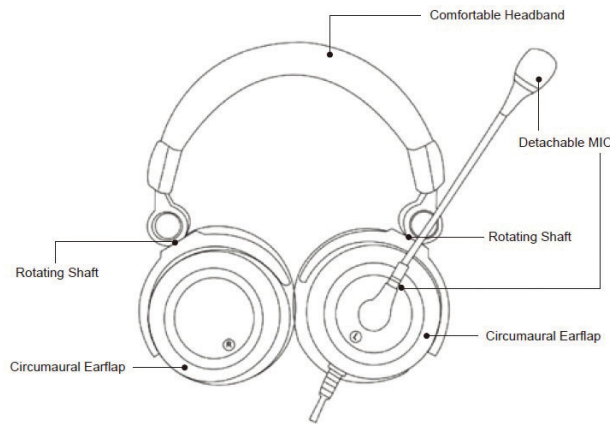
The three LED lights, shown here in blue (D), provide an indication of whether the microphone is active (LED on the far left in this photo), whether the vibration on the headphones is active (middle LED), and whether the unit is receiving power through the USB connection. No batteries are required to run the headset or the control module.

The yellow plus and minus buttons in the middle (E) are the volume controls. The yellow buttons toward the bottom of the control module (F) are the mute buttons for the microphone and the speaker (from left to right).



Along the side panel of the control module is the switch that controls the intensity of the vibration in the headset (G). Sliding the switch to the far right cancels the vibration. The "1" setting is for low intensity, while the "2" setting is for high intensity of the vibration.

Source: Rosewill



want it to be gimmicky or something that was just there.”

It’s Gotta Be Bumpin’

The vibration mechanism resides inside the USB-connected headphones. It consists of a subwoofer that creates the vibration, using an extremely low frequency any time the audio in the game is a deep, low sound. The audio frequency determines what type of vibration the system will generate.

You can set the intensity of the vibration in the headset to low, high, or off. An audio chip built into the control module will read the intensity setting and then adjust the amplification of the audio signal.

“We did a lot of tweaking,” Chan says. “We wanted it to feel like you were actually there.” ■

BY KYLE SCHURMAN

with a vibration capability. Development of the headphones required several months, Chan says, and the designers at Rosewill put together quite a few different design ideas before settling on the current configuration, which was released in May with a suggested price of about \$60.

“We’ve always wanted to do something like this, but we didn’t see the technology where we needed it to be,” Chan says of developing the headset’s vibration mechanism. “We worked through different prototypes to get the right comfortable feel, 5.1 sound, and vibration. We didn’t

Comfort Features

If you’re going to wear headphones for an extended period of time – especially headphones that will be vibrating and moving around on your head – finding a lightweight, comfortable headset is important. The RHTS-8206 weighs less than 1 pound and is highly adjustable.

“A lot went into the comfort of the headset,” Chan says. “During the testing phase, once I’d get into the office, I’d put it on, and I took it off when I left for the day. We wanted it to feel like you weren’t wearing it.”

Rosewill’s designers built plenty of padding into the RHTS-8206, especially in the headband (B). As the headphones move around from the vibration, Chan says the designers had to find the right mix for the tightness of the headband, allowing it to stay in place during periods of vibration yet remain comfortable.

“With the tension in the headband, we didn’t want it to feel like it was a vise on your head,” Chan says.

The ear cups (C) also have quite a bit of padding and are meticulously balanced, Chan says. This is important because they house the subwoofers. You can adjust the



ear cups by rotating them so that they fit as comfortably as possible.

“We took everything into consideration,” Chan says. “If it wasn’t comfortable, we didn’t want it.”

Source: Rosewill

RHTS-8206 Specifications

The RHTS-8206 requires no batteries, as all the power the unit requires is provided along with the audio signal via its USB cable.

- Chipset: CM6206-LX
- Connector: USB
- Cord Length: 6.6 feet
- Weight: 0.99 pounds
- Headphone Frequency Response: 0 to 20KHz (front and center drivers), 20Hz to 20KHz (rear driver), 30Hz to 150KHz (subwoofer)
- Microphone Frequency Response: 30Hz to 16KHz
- Headphone Input Impedance: 64O (front driver), 32O (center and rear drivers), 8O (subwoofer); all are plus/minus 15%, except for rear driver, which is plus/minus 10%
- Microphone Impedance: 2.2KO
- Headphone Sensitivity: 88dB (front and center drivers), 117dB (rear driver), 89dB (subwoofer); all are plus/minus 3dB
- Microphone Sensitivity: Minus-56dB, plus/minus 2dB



Source: Rosewill



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GIGABYTE

Ultra Durable 5

The Tough Get Tougher

In the world of popular high-tech components, brand names and marketing messages might be a good way to get the attention of enthusiasts, but unless companies can back up their slogans and specs sheets with solid

hardware that delivers tangible results, power users will quickly move on to the next big thing that's courting their favor.

GIGABYTE clearly has this figured out and has taken it to heart, as it has

maintained a strong brand loyalty with its Ultra Durable brand of motherboards. Six years since the release of the first Ultra Durable motherboard, GIGABYTE now has released Ultra Durable 5. The Ultra Durable brand has

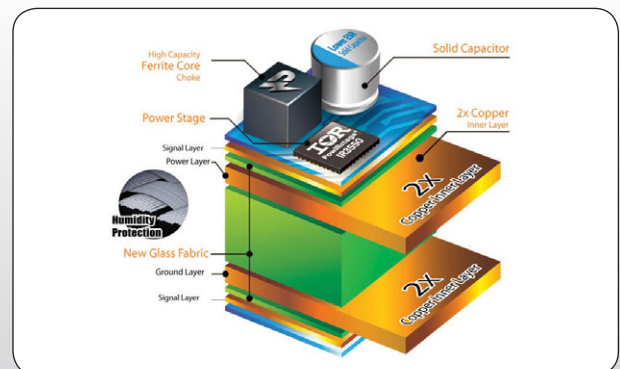
Ultra Durable 5 Overview

As shown in this illustration, the Ultra Durable 5 motherboard has quite a few components and layers.

The upper layer includes the IR3550 PowIRstage IC, a solid capacitor, and ferrite core choke.

Two signal layers surround the glass fabric layers and the copper inner layers, each of which contain twice the amount of copper of traditional boards. The top copper layer is the power layer, while the bottom copper layer is the ground layer.

Finally, Ultra Durable 5 motherboards include built-in surge protection that can be used with or without a UPS. Even if an enthusiast user has a lower-quality UPS or system power supply, the UD5 mobo will be able to provide protection against unexpected power surges.



Source: GIGABYTE

Better Overclocking Options

GIGABYTE's inclusion of the IR3550 PowIRstage ICs in Ultra Durable 5 motherboards provides a more reliable source of power for the CPU. This increases UD5 motherboards' stability for overclocking.

GIGABYTE estimates that older motherboard designs can require as many as four times as many traditional MOSFETs to perform the same functions as the IR3550 ICs that are used in an Ultra Durable 5 board. According to GIGABYTE's measurements, this allows UD5 boards to run up to 30 degrees Celsius (86 degrees Fahrenheit) cooler than other boards.

When the motherboard is able to operate at a cooler temperature, the overall system can run cooler, which should give enthusiasts more headroom to overclock their Ultra Durable 5 systems.



Source: GIGABYTE

Inside The IR3550

The interior components of the IR3550 PowIRstage IC include the following:

Power connections. GIGABYTE has included copper connections (A) for its electrical paths in the IR3550, which creates better performance than traditional wire connections, as there's less resistance to the electrons.

Driver IC. The IR3550 includes a MOSFET IC driver (B), created by International Rectifier, that plays a key role in the overall motherboard performance by controlling the flow of electric current through the high and low side MOSFETs.

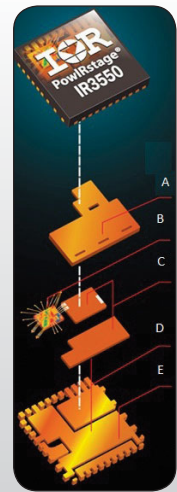
High and low side MOSFETs. These MOSFETs (C) are switches that serve to allow or block the flow of electric current to the CPU. The driver IC controls the MOSFET switches. The high side MOSFET includes a very low gate charge, for

example, while the low side MOSFET provides efficiency for the system.

Current paths. The bottom panel of the IR3550 is close to the MOSFETs, which shortens the path that the electrical flow must travel (D), allowing the IR3550 to handle the 60 amps of power more efficiently and with greater durability.

Heat conduction. The proximity of the bottom panel, along with the inclusion of copper in the panel (E), lets the IR3550 dissipate heat more efficiently than traditional designs.

Source: GIGABYTE

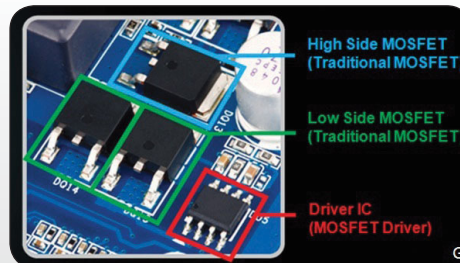


Single Package vs. Multichip

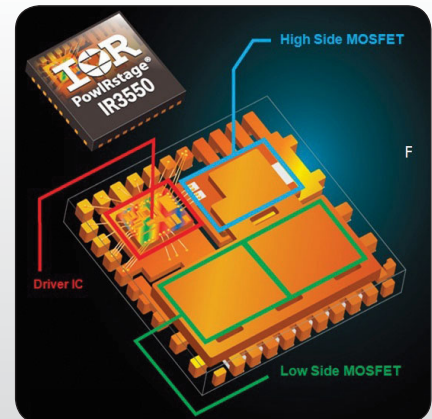
The most significant change that GIGABYTE has made with Ultra Durable is the inclusion of the single PowIRstage IR3550 chip. The IR3550 includes the driver IC, high side MOSFET and two low side MOSFETs on a single chip.

By placing all of the components on the IR3550, GIGABYTE is able to improve the thermal performance of its motherboard compared to a traditional multichip design, where the driver IC and both the high side and low side MOSFETs are separately laid out on the motherboard.

As shown here, the layout of the single package design occupies less space on the motherboard than a traditional multichip layout. In addition, the multichip design requires more circuitry on the board, which can lead to more



electrical leakage. This can cause more heat to build up in the traditional motherboard compared to the Ultra Durable 5.



Source: GIGABYTE

Delivering Power To The CPU

Ultra Durable 5 uses a variety of high-end components to deliver power to the CPU, as shown here. Part of the key to the performance levels of all Ultra Durable motherboards throughout the years is the use of high-quality components.

The PWM controller, which is an IC that handles power management, and the MOSFET driver IC handle the passing of the power to the high and low side MOSFETs, which are part of the IR3550 design in the Ultra Durable 5.

UD5 then makes use of a ferrite core choke and solid capacitors to finalize power delivery to the CPU. The ferrite



core chokes are rated up to 60 amps, which help keep the motherboard's power delivery as stable as possible, aiding the overall system performance.

Source: GIGABYTE

remained strong, something that isn't easy to do in the enthusiast market over a period of more than half a decade. The company estimates that it has shipped as many as 100 million Ultra Durable motherboards, and there's no sign GIGABYTE has any intention of letting up. Ultra Durable 5 includes the best features of the previous versions of Ultra Durable motherboards, as well as one significant new feature aimed at providing strong and consistent power delivery to the motherboard, which leads to a cooler overall system and greater overclocking capabilities.

"Each new iteration of Ultra Durable technology improves the quality of our motherboards, but Ultra Durable 5 is the first that has such a strong overclocking performance flavor," says Raymond Tseng, vice president of research and development at GIGABYTE.

Introducing The IR3550

The IR3550 PowIRstage IC (integrated circuits), which is rated for up to 60 amps of power, is the key new component in UD5. Ultra Durable 5 motherboards' use of components in the Ultra Durable 5 motherboard that are rated for higher amperages lets the overall system to be more resistant to high temperatures, as well as being more power efficient.

"We are moving to Ultra Durable 5 now because we are finding that many of our system builder partners are selling overclocked gaming systems with closed-loop liquid-cooling," Tseng says. "While closed-loop CPU coolers are great for CPU cooling, they don't provide any airflow over the CPU VRM, hence the need for 60A low-heat, PowIRstage ICs."

The addition of the IR3550 PowIRstage ICs creates a single

package power stage, which makes the IR3550 different from the traditional MOSFETs that you'll find in other motherboards. (The MOSFET, or metal oxide semiconductor field effect transistor, handles the switching and amplifying of electronic signals in a circuit board. See the "Single Package vs. Multi-Chip" sidebar for more information.)

With most cutting-edge hardware designed with overclockers and other hardcore users in mind, GIGABYTE motherboards packing UD5 technology (currently, the company has announced a handful of X79-based and Z77-based boards, although availability was yet to be confirmed at press time) won't likely be available at entry-level prices. Still, power users looking at putting together high-end systems sporting a UD5 motherboard will be more than willing to pay for the quality. ■

Ultra Durable's History

GIGABYTE introduced the first Ultra Durable motherboard design in 2006. The latest version, Ultra Durable 5, debuted this year at Computex.

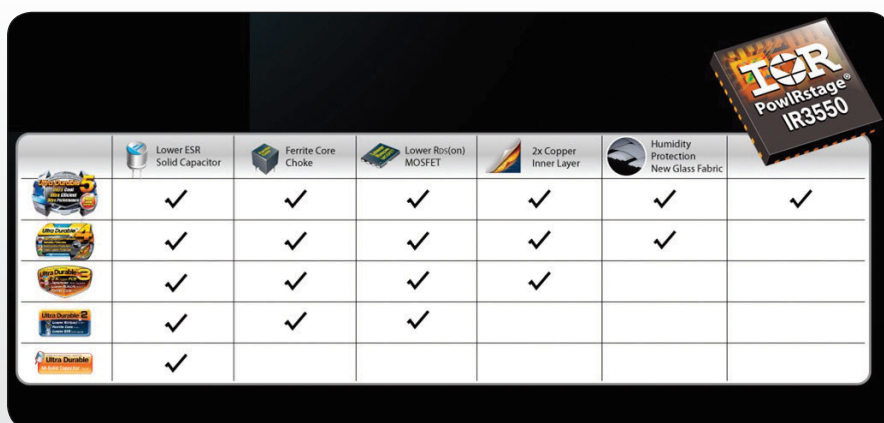
Each new generation of GIGABYTE's Ultra Durable technology has added some interesting advancements while maintaining all of the technologies in the previous versions, as listed below.

Ultra Durable (2006). The first version of GIGABYTE's technology showcased a solid capacitor, which featured a lower ESR (equivalent series resistance). Each Ultra Durable motherboard since has featured high-quality solid capacitors.

Ultra Durable 2 (2007). The second iteration of Ultra Durable added a ferrite core choke and an improved MOSFET design. The ferrite core choke consists primarily of iron oxide, along with other metal elements, that can prevent energy loss better than traditional iron core chokes while also lowering EMI.

Ultra Durable 3 (2008). GIGABYTE doubled the amount of copper in its Ultra Durable motherboards with the third version of the technology, improving the overall cooling capabilities.

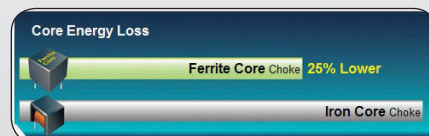
Ultra Durable 4 (2011). With the fourth generation of Ultra Durable, GIGABYTE beefed up the protection



	Lower ESR Solid Capacitor	Ferrite Core Choke	Lower Rds(on) MOSFET	2x Copper Inner Layer	Humidity Protection New Glass Fabric	IR3550 PowIRstage
Ultra Durable (2006)	✓	✓	✓	✓	✓	✓
Ultra Durable 2 (2007)	✓	✓	✓	✓	✓	
Ultra Durable 3 (2008)	✓	✓	✓	✓		
Ultra Durable 4 (2011)	✓					
Ultra Durable 5 (2012)	✓					

measures for the motherboard, including better resistance to humidity, power failures, high temperatures, and electrostatic discharge.

Ultra Durable 5 (2012). The addition of IR3550 PowIRstage ICs provides more efficient performance for the UD5 motherboard, which means the UD5 board can run faster while remaining cool.



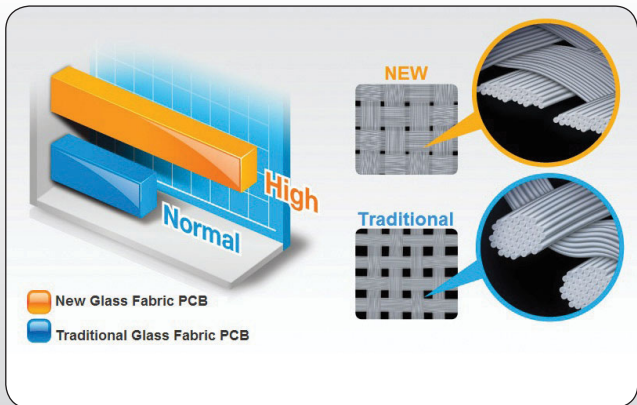
Source: GIGABYTE

Glass Fabric PCB Technology

Although many PC owners probably don't think much about the potential damage moisture can cause to their motherboards and other components, those who work in areas where there's any type of regular humidity understand the possibility of permanent damage to their computing components. With Ultra Durable 5 motherboards, GIGABYTE continues to lead with regard to humidity protection.

The innovation, called Glass Fabric PCB technology, makes use of a different fiber weave design to ensure that moisture has much more difficulty penetrating an Ultra Durable 5 motherboard than the old design, reducing the possibility of short circuits.

As shown here, a flat arrangement of the woven glass fibers results in less space between fibers than circular bundles, which means there's less of a chance that moisture will leak through.



Source: GIGABYTE

We Need More Copper!

As it has done with recent Ultra Durable motherboards, with Ultra Durable 5 motherboards, GIGABYTE again makes use of twice the amount of copper that you might find in a traditional motherboard. There are two copper layers in an Ultra Durable 5 motherboard, both of which are 70 microns thick, while the copper layers in a traditional motherboard are usually 35 microns thick.

One of the copper layers serves as the power layer, while the other serves as a ground layer. Using more copper inside the Ultra Durable 5 motherboards provides several benefits according to GIGABYTE, including the following.

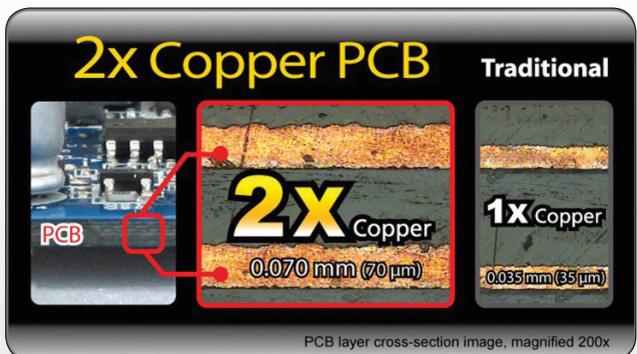
Better power efficiency. Additional copper allows the motherboard to more efficiently use the electrical power that it draws.

Lower temperatures. The greater power efficiency in Ultra Durable 5 motherboards helps lower temperatures, as does the additional copper, which better dissipates the heat in areas of the motherboard where it most builds up, such as near the CPU.

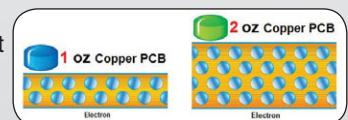
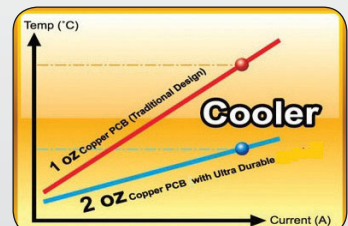
Lower impedance. By adding more copper to the motherboard, GIGABYTE estimates that the UD5 board's impedance two times lower than a traditional board, letting electrons move more freely. This reduces electrical waste and gives the overall system better signal quality and better stability.

Lower EMI. Using more copper in the motherboard provides a stronger copper grounding layer, which leads to lower electromagnetic interference.

Better ESD protection. The larger copper ground layer also means that the motherboard's electrostatic discharge is up to 10% lower. This lowers the possibility that static electricity could damage the motherboard.



PCB layer cross-section image, magnified 200x



The ICs used on UD5 motherboards also provide resistance to static electricity compared to ICs used in other motherboards. One of the most common areas where users experience problems with ESD occurs at the USB ports, where static electricity can arise as USB connectors are inserted and removed, but the UD5's design better protects motherboards from these worries.

Better overclocking. All of these factors mean that Ultra Durable 5 motherboard users should be able to push their overlocks even further.

Source: GIGABYTE

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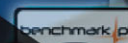
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QUICK, MAKE OF LIST OF SYSTEM COMPONENTS

that truly look different from manufacturer to manufacturer. Pretty short list, isn't it? Sure, graphics cards may have interesting, eye-catching heatsink shrouds, but you can really only see them if you're looking up at them from below. The same goes for memory; there are certainly exotic, distinct modules, but when they're plugged into your motherboard and you're looking at them head-on, there isn't a great deal of variance from DIMM to DIMM. Don't even get us started on hard drives.

Bottom line: There are only a handful of components that can truly set your rig apart from the rest as far as appearance is concerned. Motherboards are a good example, for one, but the sweetest-looking mobo won't do anything for you aesthetically if you have it locked behind an opaque side panel. If you really want people to notice your system, there's one way to do it: a killer case.

Naturally, as far as we're concerned, beauty is more than steel deep. We demand (and require) a lot more from PC case manufacturers than the average user. We understand that proper cable management is just as important from a practical standpoint as it is from a visual standpoint. We want features that make our cases easy to access as well as easy on the eyes. In short, a proper case for a proper power user has to be exceptional on both sides of the chassis.

Today's PC case makers have responded in kind. Even things that were considered extras a few years ago, such as CPU cooler cutouts on the motherboard tray and removable dust filters, are practically standard now, even on entry-level units. Some of the more avant-garde companies, who have undoubtedly taken a cue or several from case modders, have been creating dazzling cases that stand as both exceptionally functional and visually breathtaking. Conversations among enthusiasts frequently turn on the next SSD or an upcoming GPU, but there's also no time like the present to talk about a case upgrade.

Ready For Heavy-Duty Hardware

Including any and every feature is necessary to survive in the ever increasingly competitive in the high-end market. Top-shelf cases must be able to handle top-shelf parts, so a high-dollar chassis will often have support for super-sized motherboards (E-ATX, XL-ATX, and HPTX) in addition to ATX and mATX form factors.

You'll often see a minimum of eight rear expansion slots to let you install a quartet of dual-slot graphics cards.

The list goes on. Many of the same cases have built-in SATA backplanes that make hot-swappable drive bays possible, and a handful of models have integrated liquid-cooling setups, so you don't have to worry about buying a gigundus radiator that ends up being too big for your case. For the vast majority of cases that don't have their own liquid-cooling systems, manufacturers have almost universally embraced giving their cases grommets to accommodate liquid-cooling tubing. All of these features are usually wrapped up in a slick aluminum package.

All Of The Features, A Fraction Of The Price

True, a premium chassis that costs more than a lot of Core i7 CPUs will offer features galore paired with an incredible level of fit and finish. But as newcomers enter the ring (and as well-established companies add cases to their product portfolios), the extreme competition has helped most of the high-end features mentioned above to trickle down to entry-level models. Now, it's not uncommon to see a \$50 case sporting cable management channels and near-total tool-less construction. You get a lot more for your dollar than a simple, no-frills chassis.

If your system budget doesn't permit you to go all out with your case, we recommend shooting for maximum flexibility. Look for things such as fan mounts that support both 120mm and 140mm fans (and in some instances, 80mm and 92mm), which can let you repurpose your existing stockpile of fans. Try to get a case that has internal drive bays that let you install either 3.5-inch or 2.5-inch storage drives. Maybe a having a little flash is more your thing; lots of affordable cases give you an LED fan or two right off the bat.

The Right Case For Your Next Creation

This buyer's guide covers a wide range of chassis suited for virtually every buyer. We've selected our top models for everyone from Baltic Ave. to Boardwalk, so there are several great picks here for you, regardless of the number of zeroes (or lack thereof) in your bank account. Further, our buffet line is stocked with every variety of delicacy: We have a nice sampling of full towers and midtowers, plus cases that will shine in an HTPC/SFF role.

Your case is how you introduce your machine to your fellow power users. On the following pages, we give you choice after choice cases that let you put your best enthusiast foot forward. Case dimensions are listed by height x width x depth, and prices marked with an asterisk (*) are current online prices at the time of this writing. ■

SSDs

Thermaltake DH 102

\$499.99

www.thermaltakeusa.com

Why You'll Dig It: It's hard to find another HTPC case as gorgeous as the DH 102. Just look at that amazing 7-inch touchscreen built into the brushed aluminum front panel. "Striking" is an understatement. The DH 102's 120mm front intake fan whirs at a barely audible 16 decibels, and the two 60mm rear exhaust fans are nearly as quiet, at a mere 19 dBA. Speaking of cooling, ample ventilation on the top and side panels help keep your HTPC components cool, which helps keep them quiet. Working inside an HTPC can often be a chore, which makes the tool-less drive bays terrific. And although it might go without saying, Thermaltake includes a remote control with the DH 102.

Who Should Apply: HTPC aficionados ready to take the first step toward building a truly remarkable HTPC.

Dimensions: 6 x 17.1 x 16.8 inches

Motherboard Support: ATX, microATX

Drive Bays: 1 5.25-inch external, 3 3.5-inch internal



Mountain Mods Extended Ascension CYO

\$419.99 (base price)

www.mountainmods.com

Why You'll Dig It: In a word, customizability. The Extended Ascension CYO lets you call the shots. Start with a positively gigantic 24 x 18 x 24-inch (HxWxD) case and then start picking. You can choose the color of the acrylic (UV blue, green, or orange; smoked grey; or mirrored), finish (Black Wrinkle, Mirror Black, Anodize Black, or Custom Powder Coat), back and front panel types, fan spacing, and more. Mountain Mods includes a set of casters to help you move this brute around, too.

Who Should Apply: Power users who want the final say in what their case looks like—inside and out.

Dimensions: 24 x 18 x 24 inches

Motherboard Support: ATX, microATX, E-ATX*, XL-ATX*, HPTX*

Drive Bays: Up to 10 5.25-inch external (varies by front panel option), 6 3.5-inch internal (optionally up to 40)

*Optional configuration



Thermaltake Level 10 GT LCS

\$369.99

www.thermaltakeusa.com

Why You'll Dig It: When we say that this bad boy from Thermaltake has built-in liquid-cooling, we're not just talking about a closed-loop CPU cooler. Tucked away in this sweet tower is Thermaltake's BigWater 850 GT, which consists of a P500 pump, pure copper CPU waterblock, reservoir, 240mm radiator, quick-connect nonspill valves, and Thermaltake's Flow TX. There's more cooling, and more visual flair, courtesy of two 200mm Colorshift fans installed on the front and left side panels, respectively. Thermaltake calls its quintet of 2.5/3.5-inch hot-swap bays "PitStop 5"; we call it brilliant.

Who Should Apply: Fans of the Level 10 who want an almost identical look at roughly half the price, with built-in liquid-cooling to boot. Gamers who need a case that can handle ultra-long graphics cards will love that the Level 10 GT LCS supports graphics cards up to 14.2 inches long.

Dimensions: 23 x 11.1 x 23.2 inches

Motherboard Support: ATX, microATX, E-ATX

Drive Bays: 2 5.25-inch external, 1 3.5-inch, 5 2.5/3.5-inch easy swap



Cooler Master COSMOS II

\$349.99

www.coolermaster-usa.com

Why You'll Dig It: Like its COSMOS ancestors, the COSMOS II is a case that gives you virtually everything you want and then throws in a bunch of extras. The quick-release panels are back for an encore, and they're better than ever. Another excellent improvement is the COSMOS II's use of a dual-chamber design, which separates the PSU bay and six of the case's 11 internal 2.5/3.5-inch drives from the rest of the system. (The drive bays have dedicated cooling, too, courtesy of two included 120mm fans.) The COSMOS II's support for graphics up to 15.1 inches long effectively means that even the gargantuan AMD Radeon HD 6990 and NVIDIA GeForce GTX 690 will have plenty of breathing room in this case.

Who Should Apply: Power users who want a mind-blowing case for their mind-blowing hardware.

Dimensions: 27.7 x 13.5 x 26.1 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX, SSI CEB, SSI EEB

Drive Bays: 3 5.25-inch external, 2 3.5-inch external hot-swap, 11 2.5/3.5-inch internal



Corsair Obsidian Series 800D

\$299.99

www.corsair.com

Why You'll Dig It: We continue to recommend the Obsidian Series 800D because it has withstood the test of time and remains one of the best full towers you can buy today. The aluminum front panel looks amazing and has a built-in door that swings open to reveal a four-drive 6Gbps SATA hot-swap drive cage. Speaking of that drive cage, it's one of the 800D's three isolated cooling zones, which also include a power supply compartment and main compartment. The 800D has mounting for a 360mm radiator (or, alternatively, 120mm or 240mm) to keep things even cooler. Lots of cable management channels are great for easily building a system with immaculate cabling, so it's no wonder so many boutique builders offer the 800D as a case option for their high-end systems. Simply put, the case is incredible.

Who Should Apply: Gamers and enthusiasts who want a case built with Corsair's insistence on outstanding quality.

Dimensions: 24 x 9 x 24 inches

Motherboard Support: ATX, microATX, E-ATX

Drive Bays: 5 5.25-inch external, 4 3.5-inch hot-swap, 2 3.5-inch internal



Danger Den DD Q20

\$269.99

www.dangerden.com

Why You'll Dig It: You may have heard of Danger Den, a company of nice, upstanding folks in the Pacific Northwest who love to build ridiculously cool cases. The DD Q20 happens to be one such case. Danger Den lets you choose from a staggering number of colors for the DD Q20's top and bottom panels and grilles for a \$20 upgrade. You can also choose from a number of options for the DD Q20's front panel (one, two, or no 5.25-inch bays, in combination with mounts for radiators of several sizes). Danger Den can also etch your custom graphic in the case for an additional fee. Grab one of these killer acrylic cases and learn how the DD crew has garnered so many loyal fans.

Who Should Apply: LAN partygoers shopping for a case that will wow the room.

Dimensions: 20.75 x 7.3 x 18.2 inches

Motherboard Support: ATX

Drive Bays: 1 or 2 5.25-inch external, 4 3.5-inch internal, 3 2.5-inch internal



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Mountain Mods U2-UFO CYO

\$279.99 (base price)
www.mountainmods.com

Why You'll Dig It: This is your LAN party companion cube. Constructed out of aluminum, the U2-UFO CYO takes one of Mountain Mods' most storied chassis, the U2-UFO, and lets you deck it out any way you like. There are so many design, color, and finish options for the U2-UFO CYO that we simply don't have enough space to cover them all; you owe it to yourself to hit up Mountain Mods' website and use the CYO Flash Picker to see just how many combinations are available. This means you can customize this U2-UFO exactly according to your hardware. In fact, there could be no other U2-UFO that's identical to the one you create.

Who Should Apply: Builders who have very specific wants and need a case they can tailor to perfectly meet their requirements.

Dimensions: 18 x 18 x 18 inches
 Motherboard Support: ATX, microATX, E-ATX*, XL-ATX,* HPTX*
 Drive Bays: Up to 10 5.25-inch external, up to 18 3.5-inch internal

*Optional configuration



Moneual Lab MonCaso 312 Silver

\$249.95
www.moneualusa.com

Why You'll Dig It: Obviously, an HTPC needs to look the part when it's surrounded by a complement of top-shelf A/V gear. That's where Moneual Lab's MonCaso 312 comes in. This sleek case shows off with silver brushed aluminum panels. (It's also available in black if that's a better color match for you.) There are three rear 40mm fan mounts to keep your entertainer running cool; elsewhere, the MonCaso 312 has plenty of ventilation cut in the top panel and both side panels. The MonCaso 312's PSU bay will accept standard ATX PSUs, and the included Windows 7 MCE-compatible remote control looks terrific. Thanks to an integrated media card reader (hidden behind a flip-down door on the front panel, naturally), the MonCaso 312 lends itself to displaying your photos and videos on the big screen.

Who Should Apply: Consumers who want to build an HTPC that is indistinguishable from the rest of their home theater pieces.

Dimensions: 4.13 x 17 x 14.5 inches
 Motherboard Support: microATX
 Drive Bays: 1 5.25-inch external, 3.5-inch internal



Zalman GS1200

\$239.99*

www.zalman.com

Why You'll Dig It: The stately GS1200 has a polished, clean look that cannot be overstated. The GS1200 doesn't hold anything back in the LED department; in addition to the pair of 92mm LED fans on the front panel, the top and left side panel each have a 200mm LED fan. The rear panel fan (as in, the one you won't be able to see, anyway) is the only fan in the GS1200's arsenal that isn't LED-lit. The GS1200 will also accept graphics cards with a maximum length of 13.7 inches, which makes this case an ideal home for an SLI or CrossFire gaming monster. Cable management holes and a sizable CPU cutout make working inside this case a breeze.

Who Should Apply: DIY enthusiasts who want to build a system that runs as cool as it looks.

Dimensions: 22.4 x 10.2 x 25.2 inches

Motherboard Support: ATX, microATX, E-ATX

Drive Bays: 4 5.25-inch external, 1 3.5-inch external (via 5.25-inch external), 6 3.5-inch internal (hot-swap optional)



AZZA Fusion 4000

\$239.95*

www.azdatek.com

Why You'll Dig It: The Fusion 4000 is a tower among towers. Standing 30.7 inches tall, this case is unapologetically massive. Of course, AZZA put all that space to good use, because the Fusion 4000 is designed to house two systems. The primary cavity of the case supports motherboards up to the colossal XL-ATX form factor, and the upper portion of the Fusion 4000 lets you install a Mini-ITX-based system. AZZA includes two 120mm blue LED fans up front and a 140mm fan on the rear panel to get you started, but if watercooling's what you want, know that the Fusion 4000 supports one 480mm, one 360mm, and one 120mm radiator. Dedicated 2.5-inch internal drive bays and support for graphics cards up to 14.2 inches long are also great.

Who Should Apply: Power users who have big dreams for building the ultimate system(s).

Dimensions: 30.7 x 10.2 x 24 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX, Mini-ITX

Drive Bays: 6 5.25-inch external, 8 3.5-inch internal (Easy Swap), 4 2.5-inch internal (Easy Swap), 2 3.5-inch external



Xigmatek ELYSIUM

\$219.99*

www.xigmatek.com

Why You'll Dig It: Elysium—Russell Crowe blathered about it in “Gladiator,” and by all accounts from classical literature, it's a pretty sweet place for a very long-term vacation. It also happens to be the moniker of one of the raddest full towers we've seen in a while. The ELYSIUM gladly accepts the most powerful hardware around, including HPTX and XL-ATX motherboards, and white LED fans mounted on the front (two 120mm), rear (one 120mm), and left side (one 200mm) panels truly are something to behold. The windowed left side panel is almost all window, too, letting you show off your uber components. In addition to the relatively standard collection of top panel I/O options, the ELYSIUM also has a hot-swap dock that accepts 2.5-inch or 3.5-inch SATA drives.

Who Should Apply: Gamers and enthusiasts who need an awesome home for their high-end hardware.

Dimensions: 24.3 x 9.06 x 26.1 inches

Motherboard Support: ATX, Mini-ITX, microATX, E-ATX, XL-ATX, HPTX

Drive Bays: 12 5.25-inch external, 8 3.5-inch internal (via 6 5.25-inch external)



ENERMAX Fulmo GT

\$219

www.ecomastertek.com

Why You'll Dig It: The Fulmo GT means business, and business is good. In this full tower package, you get support for XL-ATX and HPTX motherboards, a pair of PSU bays, 10 expansion slots, and support for up to 15 fans (and the Fulmo GT starts you off on the right foot by including three of ENERMAX's awesome 180mm VEGAS fans). The Fulmo GT's top panel is similarly well-equipped, with hot-swap dock that accepts a 2.5-inch or 3.5-inch drive, four USB 3.0 ports, and control's for your system fans' speed and lighting. A set of lockable casters, four top-panel USB 3.0 ports, and a SATA hot-swap dock sweeten the deal.

Who Should Apply: Diehard power users who are ready to build the system of their dreams and need a case to hold it all.

Dimensions: 25.2 x 9.3 x 26.5 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX, HPTX

Drive Bays: 4 5.25-inch external, 1 2.5-/3.5-inch external hot-swap;

10 2.5/3.5-inch internal



Aerocool Strike-X ST

\$209

www.aerocool.us

Why You'll Dig It: If you have ambitions to build The Most Powerful System EVAR, then you'll find that the Strike-X ST will more than support your megalomaniacal machinations. This imposing tower provides quarter for some of the biggest motherboards on the planet. Aerocool includes a trio of red LED fans for some visual pop, plus the Strike-X ST has room for a total of 21 system fans if you're so inclined. Expansion slots (10) and drive bays aplenty let you install exotic graphics and storage subsystems, respectively. The Strike-X ST's top panel is tricked out with a three-channel fan controller, two USB 3.0 ports, two USB 2.0 ports, headphone and mic jacks, and a handy hot-swap dock that's compatible with 2.5-inch and 3.5-inch drives.

Who Should Apply: Demanding system builders who believe "go big or go home" is a way of life.

Dimensions: 25 x 9.1 x 27.6 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX, HPTX

Drive Bays: 4 5.25-inch external, 1 2.5/3.5-inch external, 10 2.5/3.5-inch internal



Cooler Master CM Storm Trooper

\$189.99

www.coolermaster-usa.com

Why You'll Dig It: The CM Storm Trooper is one of the latest additions to Cooler Master's line of gamer-focused hardware. It's practically a no-brainer if you already have a number of CM Storm products, but even if you don't, this is a great place to start. There's a built-in handle on the top of the case to make transport to and fro a less painful process, a gigantic CPU cutout on the motherboard tray, intelligently placed cable management cutouts, and internal drive cages that rotate 90 degrees. Cooler Master also starts you with a healthy number of fans, including two 120mm LED fans on the front panel, one 140mm rear exhaust fan, and a massive 200mm blower on the top panel.

Who Should Apply: Gamers in need of a high-end case with tons of options.

Dimensions: 23.8 x 9.8 x 22.8 inches

Motherboard Support: ATX, microATX, XL-ATX

Drive Bays: 9 5.25-inch external, 8 3.5-inch internal (via 5.25-inch external), 13 2.5-inch internal (via 5.25-inch external)



Rosewill BLACKHAWK-ULTRA

\$189.99

www.rosewill.com

Why You'll Dig It: You want fans? You got 'em. Right out of the box, the BLACKHAWK-ULTRA has four red LED fans (two 140mm front, two 230mm top), one 140mm rear fan, two 140mm fans installed on the interior side of the case's internal drive cage, and a 230mm side-panel fan. You can put those fans to good use, too, because the BLACKHAWK-ULTRA supports gigantic XL-ATX and HPTX motherboards and has enough rear expansion slots for four dual-slot graphics graphics (with space leftover).

Who Should Apply: Uncompromising builders who want capable air cooling from the get-go.

Dimensions: 25 x 9.45 x 25.99 inches

Motherboard Support: ATX, SSI CEB, E-ATX, XL-ATX, HPTX

Drive Bays: 3 5.25-inch external, 1 3.5/5.25-inch external, 10 2.5/3.5-inch internal



AZZA Genesis 9000

\$169.99*

www.azzatek.com

Why You'll Dig It: AZZA has an impressive fleet of cases, and its new Genesis is an excellent addition. Like a few other cases we've seen recently, the Genesis 9000 lets you spin the motherboard tray 180 degrees, which positions the graphics cards to blast hot air out the top of the case. And if you really want to go crazy with cooling, the Genesis 9000 supports up to three radiators—one 120mm, one 240mm, and one giant 480mm. The Genesis 9000's spacious interior is also capable of holding graphics cards up to 15.7 inches long and two power supplies. Also available in black.

Who Should Apply: Power users who want to create a dream liquid-cooling setup.

Dimensions: 25.1 x 9.8 x 23.2 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX

Drive Bays: 9 5.25-inch external, 1 3.5-inch external, 2 3.5-inch internal, 2 2.5-inch easy swap (up to 5), 2 3.5-inch easy swap (up to 5)



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PROCESSOR

In Win Dragon Rider

\$169.99

www.inwin-style.com

Why You'll Dig It: Mesh, mesh, and—wait for it—more mesh. Trust us, though, the Dragon Rider makes one heck of a visual statement. And, of course, the side benefit is ample amounts of ventilation. The Dragon Rider makes it easy to put that mesh to good use, too, with fan mounts for up to a staggering 11 120mm fans. In Win includes a 120mm on the right side panel behind the case's CPU cutout to give your CPU cooler a helping hand. Beyond that, the Dragon Rider is overflowing with features power users crave, such as eight expansion slots, SSD drive trays, two USB 3.0 ports, and a colossal 220mm LED side panel fan.

Who Should Apply: PC builders with a penchant for air cooling. The Dragon Rider's included LED fans make this case an excellent choice for anyone who wants to make a visual statement.

Dimensions: 21.9 x 9.4 x 22.8 inches

Motherboard Support: ATX, microATX, E-ATX

Drive Bays: 5 5.25-inch external, 1 3.5/5.25-inch external, 6 3.5-inch internal, 1 2.5-inch



NZXT Switch 810

\$169.99

www.nzxt.com

Why You'll Dig It: Many of NZXT's cases have a somewhat avant garde look, and you get a little of that with the company's new Switch 810. From the top and front panels to the Switch 810's side-panel window, angled accents make this full tower stand out. Beyond that, the Switch 810 is all about options. With the ability to hold a 360mm/420mm radiator up top, a 140mm/240mm down below, and as many as 10 120/140mm fans, the Switch 810 offers massive cooling potential whether your element of choice is water or air. The Switch 810's eye-catching white panels are a thing to behold, but if you're after a slightly more traditional looking, you can score a Switch 810 Special Edition (\$179.99), which is the same case but in either a matte black or gunmetal gray finish.

Who Should Apply: LAN party adventurers who want to make a statement.

Dimensions: 23.4 x 9.3 x 23 inches

Motherboard Support: ATX, Mini-ITX, microATX, E-ATX, XL-ATX

Drive Bays: 4 5.25-inch external, 6 3.5-inch internal



BitFenix Colossus Venom

\$169

www.bitfenix.com

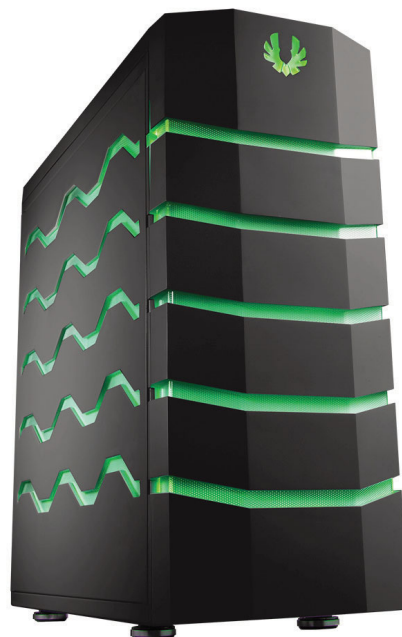
Why You'll Dig It: BitFenix's SofTouch proprietary surface treatment gives the Colossus Venom a distinct look and feel; the "Venom" label refers to this full tower's wicked cool green LED external lightning. (You can also change the Colossus Venom's stripes to red if that strikes your fancy. The Colossus Venom's beauty is more than skin deep, however, with a pair of tornadic 230mm fans (one front, one top), two USB 3.0 ports, and cord management channels on the case's front bezel. BitFenix also includes a treasure trove of features on the Colossus Venom's top panel: The BitFenix S3 storage compartment is a lockable cubby that also hosts the case's top panel I/O ports as well as its PWM fan controller and multimode light controls. It's a thoughtful addition that comes in handy at LAN parties.

Who Should Apply: Builders seeking a case with a unique aesthetic.

Dimensions: 22 x 9.6 x 22.9 inches

Motherboard Support: ATX, Mini-ITX, microATX, E-ATX

Drive Bays: 5 5.25-inch external, 1 3.5-inch internal, 7 2.5/3.5-inch internal



ARCTIC Silentium T ECO 80

\$159.43

www.arctic.ac

Why You'll Dig It: Quiet computing is one of ARCTIC's hallmarks, and it's on display here. The Silentium T ECO 80 is equipped with an antivibration HDD cage, and the case fans (two 80mm rear) are also built to absorb vibration. The fans are temperature-controlled, as well, so they won't run at full blast when they're not needed. ARCTIC also does you a solid by including its Fusion 550F Silentium Edition power supply, a 550-watt unit, as you might imagine. With its sharp exterior, the Silentium T ECO 80 is a good-looking midtower that's worthy of your consideration.

Who Should Apply: System builders who want to minimize their acoustic footprint will find that the ARCTIC Silentium T ECO 80 was designed with their interests in mind.

Dimensions: 16.9 x 7.1 x 17.7 inches

Motherboard Support: ATX, microATX

Drive Bays: 2 5.25-inch external, 1 3.5-inch internal



Corsair Vengeance C70

\$139.99

www.corsair.com

Why You'll Dig It: When Corsair sent us a Graphite Series 600T that had been custom-painted in military green for the CPU System Workshop in the April 2012 issue (see page 36), little did we know that it was the start of something much grander. If you looked at that case and thought, "That is the color I want for my system," we have good news: One of the color options of Corsair's new Vengeance C70 midtower just happens to be . . . military green! (Arctic white and gunmetal black are the other options.) Aside from its good looks, the Vengeance C70 means business when it comes to cooling. You can install up to two 240mm radiators for a dual-loop configuration; if air cooling's your bag, the C70 supports up to 10 fans, and three 120mm fans are included.

Who Should Apply: Builders going for a military-themed system should pull the trigger on this case immediately. It's a great case for any enthusiast, however.

Dimensions: 19.7 x 9.1 x 21 inches

Motherboard Support: ATX, microATX

Drive Bays: 3 5.25-inch external, 6 2.5/3.5-inch internal



XClio Touch 787

\$129.99*

www.xclio.com

Why You'll Dig It: This case has lights like you wouldn't believe. Let's start with the top panel's massive touch-sensitive control panel (what gives the case its name, naturally). Each button on the eight-button panel is ringed with an LED light; the top four buttons handle system fan speed, while the bottom four control functions such as system power and the Touch 787's fans' LED lights. This of course leads us to the case's 120mm LED fans—all 10 of them. That's right, XClio goes all out here, with one fan on the front panel, one on the rear panel, two up top, and a whopping six on the left side panel. This staggering number of LED-lit case fans alone nearly covers the cost of the Touch 787.

Who Should Apply: If you can't get enough LED case fans, you may have just met your match.

Dimensions: 19.5 x 8.7 x 20.5 inches

Motherboard Support: ATX, microATX, Mini-ITX

Drive Bays: 4 5.25-inch external, 6 3.5-inch internal



Antec Eleven Hundred

\$129.95

www.antec.com

Why You'll Dig It: Can you say "XL-ATX"? We knew you could. The Eleven Hundred will support these big mobos, along with three-way SLI and four-way CrossFire, so you can put a lot of firepower in this case. The Eleven Hundred gives you a great start in the cooling department, too, with a giant 200mm exhaust fan (with blue LEDs) mounted to the top panel and a 120mm rear exhaust fan. Other goodies include a generous 36mm of space behind the motherboard tray to aid in cable management, two USB 3.0 ports that connect to an internal motherboard header, and a small PCB slab that lets you connect four 3-pin system fans.

Who Should Apply: Enthusiasts who want to build a monster system in a midtower chassis.

Dimensions: 20.7 x 9.3 x 21.5 inches

Motherboard Support: ATX, microATX, Mini-ITX, XL-ATX

Drive Bays: 3 5.25-inch external, 6 3.5-inch internal, 2 2.5-inch internal



Antec P280

\$139.95

www.antec.com

Why You'll Dig It: Antec's Performance One Series has built up a respectable amount of street cred over the years; the cases in this line have shown what an insistence on maximizing aesthetics and minimizing acoustics can produce. The P280 is a stunner: Its gunmetal anodized aluminum front panel door simply pops. The P280's Quiet Computing panels and internal drive bays should minimize your system's decibel output. Antec includes three of its 120mm TwoCool fans—two on the top panel and one on the rear. The case also has room for four additional 120mm fans—two on either side of its internal 2.5/3.5-inch drive cage—and there's a fan power hub that can provide power for up to four fans via a single Molex connector.

Who Should Apply: Builders who place an importance on putting together a silent system and anyone who wants a polished case with well-executed internals.

Dimensions: 20.7 x 9.1 x 22.1 inches

Motherboard Support: ATX, microATX, Mini-ITX, XL-ATX

Drive Bays: 3 5.25-inch external, 6 2.5/3.5-inch internal, 2 2.5-inch internal



In Win Maelstrom

\$119.99

www.inwin-style.com

Why You'll Dig It: How about that side panel, ladies and gentlemen? The In Win Maelstrom rocks a 220mm LED fan on its side panel, and there's a switch on the panel that lets you turn the LED light off if your next-door neighbor complains. Alternatively, you can replace that big bad 220mm fan with six 120mm fans. The Maelstrom includes three 120mm fans out of the box, with one stationed on the front, rear, and top panels. Tool-less drive rails are included for the Maelstrom's bays, and the interior of the chassis has some noise-dampening foam padding. A pair of horizontal bars running across the front panel add a nice visual touch.

Who Should Apply: Gamers seeking tons of cooling flexibility. In addition to the side panel's options, the Maelstrom's rear panel has a quartet of predrilled, grommated holes for liquid-cooling tubes.

Dimensions: 21.7 x 8.9 x 23.7 inches

Motherboard Support: ATX, microATX, E-ATX

Drive Bays: 5 5.25-inch external, 6 3.5-inch internal



Rosewill THOR V2

\$119.99

www.rosewill.com

Why You'll Dig It: Great Odin's Raven! It's rare to see cases with XL-ATX support ring up for under 150 bucks, but the THOR V2 does it by a comfortable margin. Expansion slots and drive bays abound on the THOR V2, with 10 of the former and 13 (see below for a specific breakdown) of the latter. This full tower case has an excellent assortment of preinstalled fans (one LED 230mm front, one 230mm top, one 230mm side, and one 140mm rear), a built-in fan controller that supports up to two fans, and two front panel USB 3.0 ports that connect to internal motherboard headers.

Who Should Apply: Enthusiasts looking for a titanic chassis for a high-end system build. The trio of 230mm fans make the THOR V2 an exceptional choice for builders who want a case that moves a lot of air.

Dimensions: 22.8 x 9.1 x 21.9 inches

Motherboard Support: ATX, microATX, E-ATX, XL-ATX

Drive Bays: 6 5.25-inch external, 6 3.5-inch internal, 1 3.5-inch external



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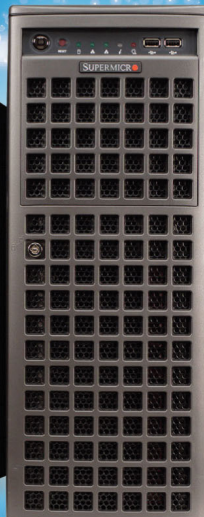
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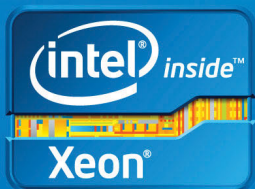
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Lian Li PC-Q08B

\$109.99*

www.lian-li.com

Why You'll Dig It: Lian Li shrinks its gorgeous aluminum cases down to Mini-ITX proportions. The PC-Q08B is designed to let power users install a bunch of powerful hardware (such as a standard ATX PS/2 PSU and, if you remove the lower internal drive cage, a dual-slot graphics card up to 11.8 inches long) that logic suggests has no business being in a mini tower like this. A 140mm blue LED front-panel fan and one 120mm top-panel fan keeps things cool. We have the black version of the PC-Q08B on display here, but this tiny beauty is also available in silver and red.

Who Should Apply: DIY power users who like to think small. If you're planning on creating a Mini-ITX-based system that's small but mighty, get the PC-Q08B and you can add "gorgeous" to the list, as well.

Dimensions: 10.7 x 8.9 x 13.6 inches

Motherboard Support: Mini-ITX, Mini-DTX

Drive Bays: 1 5.25-inch external, 6 3.5-inch internal, 1 2.5-inch internal



Fractal Design Arc Midi

\$109

www.fractal-design.com

Why You'll Dig It: We challenge you to find a case as elegant as the Arc Midi for less than 110 bones. Odds are that it won't compare to this beauty. This case's front panel looks terrific, and the interior is equally impressive, with intelligently placed cable management holes, a nice-sized CPU cutout, and white expansion slot covers and internal drive bay trays that pop against the Arc Midi's black interior. This case is also built to support the high-end hardware that enthusiasts demand. Remove the upper HDD cage to make room for a graphics cards up to 18.5 inches long. CPU coolers can stand up to seven inches tall and still fit inside.

Who Should Apply: Power users with a variety of hardware configurations should be able to find that the Arc Midi offers exactly what they need.

Dimensions: 18.1 x 9.1 x 20.3 inches

Motherboard Support: ATX, microATX, Mini-ITX

Drive Bays: 2 5.25-inch external, 1 3.5-inch-external (via included converter bracket) 8 3.5-inch internal



COUGAR Evolution

\$94.99*

www.cougar-world.com

Why You'll Dig It: Here's proof that you don't need to sell the house to put your hardware in an excellent full tower. Between the beveled, windowed left side panel and the mesh front panel, the Evolution has the kind of aesthetic that lets it fit right in at a LAN party. The Evolution's tool-less drives and cable management cutouts make setting up a clean interior an effortless task. This case also has lots of available cooling options. There are grommets on the rear panel for installing liquid-cooling, and the Evolution has mounts for up to seven fans. An integrated fan controller on the front of the top panel rounds out an impressive list of high-end features.

Who Should Apply: Power users unwilling to compromise on any aspect of their case, including the price.

Dimensions: 20.2 x 8.8 x 20.6 inches

Motherboard Support: ATX, microATX

Drive Bays: 6 5.25-inch external, 1 3.5-inch external (via 5.25-inch external), 1 2.5/3.5-inch external hot-swap, 4 2.5/3.5-inch internal



Aerocool Strike-X GT

\$99

www.aerocool.us

Why You'll Dig It: Aerocool takes a shrink ray and blasts it at the Strike-X ST; the result is Strike-X GT, which has the same look and feel only in a midtower frame. You get two of Aerocool's Quad Red LED fans, tool-less drive bays, and a CPU cooler cutout on the motherboard tray. There are tons of predrilled, rubber-grommets holes, both for internal cable management and for running watercooling tubes into the case. Big graphics cards aren't a problem either, as the Strike-X GT will let you install cards up to 11.6 inches long. With all of these perks, the Strike-X GT is what you buy if you're down with the Strike-X ST's good looks but find that Aerocool's flagship case has more room than you need.

Who Should Apply: Power users who love the look of the Strike-X ST but want it in a smaller form factor.

Dimensions: 18.3 x 7.5 x 19.3 inches

Motherboard Support: ATX, microATX

Drive Bays: 3 5.25-inch external, 6 2.5/3.5-inch internal



SilverStone Temjin TJ08-E

\$97.99*

www.silverstonetek.com

Why You'll Dig It: From its massive full towers to its pint-sized SFF boxes, SilverStone's exceptional craftsmanship is evident in every case it rolls out the door, and the microATX tower Temjin TJ08-E is no exception. A beautiful, brushed aluminum front panel says, "How you doin'?" As such, if you're primarily interested in building a SFF PC, you'll find that the Temjin TJ08-E has all the beauty of SilverStone's other Temjin cases, only in a smaller form factor. The front-mounted 180mm Air Penetrator fan creates a veritable tornado of airflow to keep your components cool, and the TJ08-E's four expansion slots provide enough room for a little SLI or CrossFire action with dual-slot cards.

Who Should Apply: Enthusiasts who want a sharp-looking case with great ventilation for their cutting-edge hardware.

Dimensions: 14.7 x 8.3 x 15.2 inches

Motherboard Support: microATX, DTX, Mini-ITX

Drive Bays: 2 5.25-inch external, 1 3.5-inch external, 4 3.5-inch internal, 1 2.5-inch internal



ENERMAX HOPLITE

\$89

www.ecomastertek.com

Why You'll Dig It: The HOPLITE is ready to put on a show. ENERMAX has included one of its Blue/Red Combo-LED VEGAS fans on the front panel, so this case gives you a ton of lighting options right out of the box. Quick-release bay covers on the HOPLITE's 5.25-inch external bays and tool-less internal drive bays make drive installation a snap. There are plenty of other intelligent extras, including two hot-swap 3.5-inch drive bays, a removable dust filter below the PSU bay, a generous CPU cutout on the motherboard tray, and extruded side panels that give you a little more breathing room when you're snaking cables every which way behind the mobo tray.

Who Should Apply: Gamers who were DJs in another life. Builders looking for lots of easy access features.

Dimensions: 19.8 x 8.0 x 19.5 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 2 3.5-inch external, 4 3.5-inch internal



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\$86

www.scythe-usa.com

Why You'll Dig It: Sometimes, simple is good. The silver front panel on this Gekkou Standard (alternatively, the Gekkou Standard is available with either an all-black or mirrored front panel) is the perfect amount of pop to make LAN party attendees do a double-take. The case itself also makes for a pretty good canvas for enterprising case modders to flex their modding muscles. Beyond its exterior, though, this capable case includes a pair of Scythe's 120mm PWM Slip Stream fans—one on the front panel and another on the rear panel. These fans spin at 800rpm, making them good for an airflow rating of 40.17cfm. This adds up to a noise rating of a scarcely audible 10.7dBA.

Who Should Apply: Builders who prefer classy to flashy.

Dimensions: 16.93 x 7.7 x 20.7 inches

Motherboard Support: ATX, microATX, Mini-ITX, Mini ATX, FLEX ATX

Drive Bays: 5 5.25-inch external, 4 3.5-inch internal



Apevia X-QPACK2 (NW-BK/500)

\$84.99*

www.apedia.com

Why You'll Dig It: The X-QPACK2 is loaded with way more extras than you'd expect from a SFF case. The front panel has an integrated LCD temperature display and a steel handle that lets you carry your system and/or swing it around haphazardly like an oversized bludgeoning utensil. A slide-out motherboard tray will make your system build an effortless affair. Both the 80mm front and 120mm rear fans have an exciting blue UV look, and Apevia even takes care of the power supply for you by including a 500W unit. There's also a silver variant of the X-QPACK2, and Apevia offers a variant of the X-QPACK2 with a side panel window (online for \$99.99). The windowed X-QPACK2 is available in even more colors, ranging from camouflage to pink.

Who Should Apply: SFF lovers ready for their next diminutive chassis.

Dimensions: 9 x 11.2 x 14.7 inches

Motherboard Support: microATX, Baby AT

Drive Bays: 2 5.25-inch external, 1 3.5-inc internal, 2 3.5-inch internal



Zalman Z11 Plus

\$84.99*

www.zalman.com

Why You'll Dig It: Sharp angles and cool blue LED light give the Z11 Plus a one-of-a-kind look. That blue glow comes from two 120mm LED fans (one front, one top), which join forces with a 120mm rear fan and two 80mm side fans to keep air moving through this midtower. (The Z11 Plus also has a mounts and one 120mm/140mm bottom fan.) With seven expansion slots and room for graphics cards up to 11.4 inches long, the Z11 Plus gives you a nice amount of room to install some powerful hardware. Zalman built its empire on quiet computing solutions, and you that here, with an antivibration PSU bay and antivibration dampers for the tool-less internal drive bays.

Who Should Apply: Enthusiasts seeking a midtower that looks cool and means business.

Dimensions: 20.5 x 11 x 22.5 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 1 3.5-inch external (or 1 2.5/3.5-inch internal), 5 3.5-inch internal, 1 2.5-inch internal



MSI Nighthawk

\$79.99

us.msi.com

Why You'll Dig It: The same insistence on quality that you always find in MSI's motherboards and graphics cards is clearly evident in the Nighthawk, a midtower that doesn't mess around. In addition to a USB 3.0 port on the front panel, there's a built-in media card reader that handles all of the most frequently used formats. And don't let the Nighthawk's stature fool you; it has enough space for 310mm-long graphics cards (that's enough room for a GeForce GTX 690, if you're curious) and has predrilled, grommeted holes for watercooling. Of course, if you're a fan of fans, the Nighthawk has a trio of fans—120mm front (this fan is also LED-lit) and rear fans, plus a 200mm side panel fan.

Who Should Apply: MSI hardware owners who want a case that completes the look. That said, the Nighthawk is terrific for any builder looking for a solid, well-built midtower.

Dimensions: 17.6 x 7.1 x 18.7 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 6 3.5-inch internal



XION Predator Gaming Series AXP 970

\$74.99*

www.xionusa.com

Why You'll Dig It: XION put a lot of thought into the Predator. For starters, it's a dream for anyone who is meticulous about preparing a crazy good storage subsystem. There are four dedicated 2.5-inch bays, so the Predator ends up offering a little more internal space than cases that simply have you install your SSDs in a 3.5-inch bay. Because of this, it's no wonder that you can install graphics cards up to 13.7 inches long, which includes all of the latest high-end offerings from NVIDIA and AMD. The Predator also has a pair of 3.5-inch external hot-swap bays.

Who Should Apply: With grommets for liquid-cooling tubing and top panels mounts for a 120mm or 240mm radiator, the Predator is a smart buy for power users looking for an affordable case for their liquid-cooling gear.

Dimensions: 19.5 x 8 x 19 inches

Motherboard Support: ATX, microATX, Baby AT

Drive Bays: 4 5.25-inch external, 2 3.5-inch external hot-swap, 3 3.5-inch internal, 4 2.5-inch internal



Fractal Design Core 3000

\$74

www.fractal-design.com

Why You'll Dig It: This case is a dream if you favor air cooling. Let's start with the Core 3000's front and top panels. Fractal Design has packed about as much mesh as you can possibly pack into these panels, making them extra breezy. Fractal also starts your air cooling subsystem off right, with a 140mm front intake fan and two exhaust fans—a 120mm fan on the rear panel and a 140mm fan up top. There are four more available fan mounts (one 120mm front, one 120mm bottom, one 120/140mm top, and one 120/140mm side), which helps the Core 3000 to crush ambient heat. The Core 3000, like Fractal's other cases, has a distinct look that will definitely impress.

Who Should Apply: Gamers who want a no-nonsense case with plenty of cooling options.

Dimensions: 16.9 x 7.9 x 18.9 inches

Motherboard Support: ATX, microATX, Mini-ITX

Drive Bays: 2 5.25-inch external, 1 3.5-inch external (via included converter bracket), 6 3.5-inch internal



CAN'T GET ENOUGH
cpu?



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Diablotek Abyss

\$69.99

www.diablotek.com

Why You'll Dig It: Diablotek gives you a lot of case for 70 bucks. There's a big emphasis on visual appeal here, with two included 120mm LED fans (one each on the front and rear panels) and a sizable side panel window that lets you show off your cabling skills. (The Abyss' precut cable management holes are obviously a big help here.) And the Abyss has other features power users crave, such as a pair of USB 3.0 ports and support for graphics cards up to 13 inches long. Like Diablotek's other offerings, the Abyss has grommeted holes for watercooling tubes. Diablotek backs the Abyss with a one-year warranty.

Who Should Apply: Builders seeking a reliable and affordable case that has a surprising number of cool bonuses.

Dimensions: 17.2 x 8.3 x 19.9 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 1 3.5-inch external, 5 3.5-inch internal



Raidmax Blackstorm (Black/Blue)

\$69.99*

www.raidmax.com

Why You'll Dig It: One-click-release side panels that open like inverted gull wing doors will surely elicit a consider amount of LAN party gawking, but they're pretty functional, too, letting you dive right into your system's internals with minimal effort. Continuing the minimal effort theme, all of the Blackstorm's drive bays have tool-less locking mechanisms. A built-in USB 3.0 port and a preinstalled 120mm blue LED fan are always appreciated, too. We're huge fans of the black exterior with blue trim, but if you'd like a less common look, the Blackstorm is also available in white (with the same blue accents). The left side panel has mounts to let you install a 120mm or 180mm fan for additional cooling.

Who Should Apply: Gamers and enthusiasts who have to have a midtower with attitude.

Dimensions: 18.9 x 8.1 x 20.5 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 1 3.5-inch external, 5 3.5-inch internal



ARCTIC Silentium T11

\$65.90

www.arctic.ac

Why You'll Dig It: ARCTIC COOLING puts a lot of thought into this case. A decent number of power users will use one SSD as the OS/ applications drive and one large HDD for mass storage. The Silentium provides for this by letting you convert one of the 5.25-inch bays to a 2.5- or 3.5-inch bay, and it also has one dedicated 3.5-inch internal bay. By opting out of including a larger drive cage, ARCTIC lets you use the space savings for a bunch of extra-long graphics cards. ARCTIC is, naturally, no stranger to cooling, so the inclusion of two ARCTIC F12 TC case fans starts you off right. The Silentium T11 is available in four colors—black, silver black, gray, and white.

Who Should Apply: Wise LAN party vets interested in building a powerful gaming machine with resorting to using an enormous case.

Dimensions: 16.9 x 7.5 x 19.3 inches

Motherboard Support: ATX, microATX

Drive Bays: 3 5.25-inch external, 1 5.25-inch external or 2.5/3.5-inch internal, 1 3.5-inch internal



Apex Vortex3620

\$54.99

www.apextechusa.com

Why You'll Dig It: Part of Apex's Gaming Series, the Vortex3620 is a solidly built case. There are two included 120mm fans (one front LED, one rear), plus you have the option to add an additional three 80mm or two 120mm fans. With seven expansion slots and support for ATX motherboards, the Vortex3620 gives you a good amount of room to build a respectable multi-GPU gaming system. Tool-less drive bays make slipping drives in and out a cinch. Apex tucks a dust filter behind the Vortex3620's mesh front panel, so this case should provide a good line of defense against the dust that inevitably creeps into systems. The front panel also offers four USB 2.0 ports, one eSATA port, and headphone and mic jacks.

Who Should Apply: Gamers on a budget who need a great case that won't cost them arm plus leg.

Dimensions: 16 x 7.25 x 19 inches

Motherboard Support: ATX, microATX

Drive Bays: 3 5.25-inch external, 2 3.5-inch external, 5 3.5-inch internal



Diablotek EVO

\$39.99*

www.diablotek.com

Why You'll Dig It: This slick midtower will force you to reconsider how much case you can buy for less than \$50. It has four preinstalled 120mm fans, and the front-mounted fan is of the cool blue LED variety. (One rear-panel fan and two top-panel fans complete the package.) You can mount two more 80/90/120mm fans on the left side panel to turn this case into a lean, mean, air-cooling machine. Diablotek backs the EVO with a one-year warranty, but with its 0.6mm SECC steel panels, expect it to last much, much longer than that.

Who Should Apply: Fan fanatics who know that air cooling is where it's at. Of course, the EVO also has predrilled, grommated holes for liquid-cooling tubes, so the EVO is an enticing option for a budget liquid-cooling build.

Dimensions: 18.5 x 7.48 x 17.08 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 1 3.5-inch internal, 5 3.5-inch internal



Sunbeam EVO

\$39.99*

www.sunbeamtech.com

Why You'll Dig It: That's no misprint; we found two EVO cases we think you'll like. The glossy front panel makes this case pop, and so does the included 120mm LED fan that's attached to the left side panel. Another 120mm fan is preinstalled on the EVO's rear panel, and the case has mounting holes for another 120mm fan on the left side panel, one 120mm fan on the front panel, and one 120mm top panel fan. The motherboard tray has a plenty large, rubber-grommated CPU cooler cutout, as well as holes for routing cables. All of the EVO's drive bays are tool-less, too, which is another big plus.

Who Should Apply: Considering all of the features you get for the price, thrifty enthusiasts with a couple of 20s left in their budget for a good case won't be disappointed in the EVO.

Dimensions: 17.7 x 7.9 x 16.9 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 2 3.5-inch external, 5 3.5-inch internal



Logisys Exotic Ruby Red Front Panel Case

\$37.99*

www.logisyscomputer.com

Why You'll Dig It: This is how you make a red case. The front panel on this beauty really makes it stand out; it'll look great when it's front and center at your next LAN party. Speaking of sharp aesthetics, this midtower case sports a blue LED 80mm fan, installed on the rear panel. The left side panel has a clear window, and the window includes an 80mm fan mount. With a total of 10 drive bays and seven expansion slots, the Exotic Ruby Red Front Panel Case is more than capable of holding the components you're planning to include in your build. Additionally, Logisys includes a 480W power supply with this case, a handy bonus if you want to combine your case and PSU into a single purchase.

Who Should Apply: Builders interested in a good-looking case.

Dimensions: 16.6 x 7.1 x 16.6 inches

Motherboard Support: ATX, microATX

Drive Bays: 4 5.25-inch external, 5 3.5-inch internal, 1 3.5-inch external



Logisys Optimus II

\$36.48*

www.logisyscomputer.com

Why You'll Dig It: This menacing midtower packs a punch when it comes to features. In addition to ATX motherboard support, the Optimus II will also let you install E-ATX boards. In traditional Logisys form, the included 120mm front panel fan is LED-lit, so the laser light show can begin the instant you have your system up and running. The Optimus II supports graphics cards with a maximum length of 13 inches, which is ample room for even the longest boards. In addition the 120mm LED fan, this case offers a 120mm rear fan, two 120/140mm fan mounts on the top and side panels, and a 120mm fan mount on the bottom panel.

Who Should Apply: Budget-conscious power users who are interested in a case that has lots of enthusiast features but doesn't cost a fortune.

Dimensions: 16.7 x 7.7 x 18.3 inches

Motherboard Support: ATX, E-ATX

Drive Bays: 4 5.25-inch external, 5 3.5-inch internal, 1 3.5-inch external



NETWORKING BUYER'S GUIDE

BELIEVE IT OR NOT, THE MODERN COMPUTING EXPERIENCE YOU KNOW AND LOVE IS LARGELY THANKS TO THE NETWORKING GEAR THAT PROVIDES OUR PCS WITH ACCESS TO THE INTERNET.

WITHOUT THE MODEMS, ROUTERS, ACCESS points, adapters, and NICs to make the connection, software would remain unchanged and ultimately unpatched, insecure, and feature-stagnant. When it comes to gaming, your PC would be relegated to being a glorified PS2 or GameCube, bereft of online multiplayer, patches, mods, and left with bugs that would never get fixed. The hardware you install would become unusable every time you upgraded your OS, and frequent software conflicts would likely brick the components

much sooner than that. You'd also be forced to copy any files and folders to portable storage and then manually plug the storage into the secondary computer just to transfer files. Remember the days of the floppy disk? If you mentally shuddered like we just did, then you get it.

This buyer's guide is all about networking gear. We have routers, HomePlug powerline adapters, USB adapters, an Ethernet hub, and more. On the wireless side, we've focused

ROUTERS

WIRELESS

strictly on Wireless-N-based equipment, which provides impressive range and enough throughput to handle media streaming, Internet sharing, and online gaming. There are several dual-band routers that extend the range of the wireless signal and reduce interference. Many of the routers we feature here are attractive enough to show off, some are easy to install out of sight, and others are compact enough to take with you on the road.

Although Wireless-N represents the latest and greatest as we went to press, there's a new protocol on the horizon that's beginning to make waves. The IEEE 802.11 Working Group has lofty goals for the final 802.11ac standard. When the standard becomes finalized later this year, compatible devices will support throughputs up to 1,000Mbps for multistation WLAN connections and 500Mbps

for single link connections. 802.11ac gear will be able to deftly handle multiple simultaneous HD video streams, quick syncing and backing up of large files, wireless display technologies, and more.

Although we didn't include any 802.11ac equipment this time around, you will find plenty of information to help you buy some of the best 802.11n hardware available. We've included the model, manufacturer, MSRP, and a pair of short statements—why we think you should buy it and another one about for whom the product is ideally suited. At the end of each listing, you'll also find the supported network standards, frequencies, and maximum theoretical bandwidths, where applicable.

Without further ado, we bring you some of the best networking equipment you can buy. ■

LIBRETS

ZyXEL Simultaneous Dual-Band Wireless N Media Router (NBG5715)

\$249.99

www.us.zyxel.com

Why You'll Dig It: If, like us, you consider your home network the center of your entrainment and work universe, then not just any router will do. The ZyXEL Simultaneous Dual-Band Wireless N Media Router is designed to handle everything an enthusiast is likely to throw at it, including online gaming, HD video streaming, large file sharing, VoIP calling, and Internet sharing on multiple devices simultaneously. Features we like include Gigabit Ethernet ports, QoS for lag-free gaming and flawless media streaming, and a pair of USB ports for printer sharing and network-based storage. We also like the multitude of LED-backlit indicators on the front of the unit that display connection status and help you set up WPS-compatible devices.

Who Should Apply: This router is perfect for anyone who expects a lot of their home network.

Network Standards: 802.11a/b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 450Mbps wireless, 1,000Mbps wired



Belkin Advance N900 (F9K1104)

\$199.99

www.belkin.com

Why You'll Dig It: Not all routers are created equal, and enthusiasts who demand a lot from their wireless network will find a lot of unique features in the Belkin Advance N900. This router features a 2.4GHz and 5GHz dual-band operating mode that enables simultaneous 450Mbps data streams, so you can stream HD video, share Internet access among multiple machines, enjoy VoIP calling, and much more without experiencing a weak signal due to interference. Other features we like include Belkin's EASY START simple setup, preconfigured encryption settings, wireless gaming optimizations, QoS, and a self-healing technology that fixes network problems before you even know something's happened.

Who Should Apply: This router is perfect for those who demand lag-free gaming, smooth HD streaming and playback on multiple machines, and solid security features to protect their network.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 450Mbps wireless, 1,000Mbps wired



TRENDnet 500Mbps Powerline AV Adapter Kit With Bonus Outlet (TPL-402E2K)

\$187.99

www.trendnet.com

Why You'll Dig It: The TPL-402E2K is a 500Mbps Powerline AV adapter kit ensures high-speed networking without losing an electrical outlet. A noise filter maintains optimum connection speeds when everyday household appliances such as toasters, washing machines, and coffee makers create electrical background noise. LED indicators on the front of the unit help you determine network status; red indicates a good connection, yellow means better, and green means you have the best connection. With the 500Mbps throughput, you can game online, browse the web, stream HD video, and more without a hiccup.

Who Should Apply: Users with moderate to heavy network usage who need to network devices outside the range of a wireless network should seriously consider the this powerline kit.

Network Standards: HomePlug AV

Maximum Theoretical Bandwidth: 500Mbps wired



ASUS RT-N66U

\$179.99

www.asus.com

Why You'll Dig It: This 450Mbps router from ASUS features a dual-band operating mode, which utilizes 2.4GHz and 5GHz radios to maintain high data rates over medium and long ranges. Other features include a microSD card slot, 256MB DDR2, and the ability to automatically redirect you to the router setup page instead of having to key in the router IP address. We also like that this router comes with a pair of USB 2.0 ports that can be used for universal printer sharing, media streaming, and 3G network sharing. The unit also offers several mounting and positioning options, so you can mount it on a wall, use the included stand, or just set it on top of a desk or other surface.

Who Should Apply: Anyone who wants a highly configurable and fast router for medium- and high-bandwidth applications will like what they get in the ASUS RT-N66U.

Network Standards: 802.11a/b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 450Mbps wireless, 1,000Mbps wired



NETGEAR N900 Wireless Dual Band Gigabit Router (WNDR4500)

\$179.99

www.netgear.com

Why You'll Dig It: The N900 is a capable dual-band 802.11a/b/g/n router designed to handle multiple simultaneous users, high-bandwidth applications, and more for your home or office. Features include two ReadySHARE printer and USB storage ports, support for guest network access, advanced QoS capable of prioritizing streaming video for smooth playback, and four Gigabit Ethernet ports. The NETGEAR genie is another feature we like; it's a dashboard control center that makes it easy to manage, monitor, and repair your network quickly and efficiently. Other features include support for dual (SPI and NAT) firewalls, DoS attack prevention, and enough range to deliver network access to all corners of even large homes.

Who Should Apply: This router is designed for enthusiasts who don't want their wireless network standing between them and their gaming, streaming media, and Internet access.

Network Standards: 802.11a/b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 450Mbps wireless, 1,000Mbps wired



Buffalo AirStation HighPower N600 Gigabit Dual Band Wireless Router (WZR-HP-AG300H)

\$129.99

www.buffalotech.com

Why You'll Dig It: This feature-packed router from Buffalo has a dual-band operating mode that delivers better range and throughput than comparable routers that rely solely on a 2.4GHz radio. We also love the fact that this router utilized DD-WRT firmware for setup and configuration, so you can tweak to your heart's content. Other features we like include the ability to set up a VPN connection, so you can access your home network from anywhere in the world. You can use the built-in USB port for an FTP server or universal printer sharing. This router can also switch between router and access point modes with the press of a button.

Who Should Apply: Users who need their wireless network to stream HD movies and music, access email, and browse the web from multiple devices at once will find a lot to like here.

Network Standards: 802.11a/b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 300Mbps wireless, 1,000Mbps wired



GENESIS QUUU



R-ATX

V-AIR



- **R-ATX:** REVERSIBLE MOTHERBOARD TRAY CAN BE ROTATED 180 DEGREES TO ORIENT GRAPHICS CARDS AT THE TOP.
- **V-AIR:** AN IDEAL VERTICAL AIRFLOW IS GENERATED TO OFFER EXCEPTIONAL SYSTEM COOLING.
- **SUPPORTS DUAL-POWER SUPPLY.**
- **MAXIMUM CAPACITY WATER-COOLING.**
- **ALSO AVAILABLE IN BLACK.**



Linksys E3200 High Performance Dual-Band N Router

\$109.99

home.cisco.com

Why You'll Dig It: The Linksys E3200 is designed to support wireless networking for PCs, notebooks, Internet-ready TVs, game consoles, and other Wi-Fi devices at transfer rates up to 300Mbps. The Enhanced MIMO antenna array boosts signal strength to provide exceptional coverage, dual-band technology avoids interference and maximizes throughput, WPA/WPA2 encryption and SPI firewall block unwanted access, and four Gigabit Ethernet ports provide uncompromising wired throughput. We also like the Cisco Connect Express app, which lets Android and iOS device users manage connected devices, view Wi-Fi settings, add devices, dole out guest access, and more. The built-in USB port even lets you connect an external storage device for network-wide file sharing.

Who Should Apply: Users who want flawless HD streaming, simultaneous Internet sharing, and fast wired networking will find the E3200 suits their needs and then some.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 300Mbps wireless, 1,000Mbps wired



TP-LINK N750 Wireless Dual Band Gigabit Router (TL-WDR4300)

\$99.99

www.tp-link.com

Why You'll Dig It: TP-LINK's N750 router is a dual-band unit that is capable of transmitting data at 300Mbps on the 2.4GHz band and up to 450Mbps on the 5GHz band. The three detachable antennas deliver excellent range and fast throughput ideal for medium- and large-sized homes. This router features a pair of USB 2.0 ports for connecting a printer and/or external storage device, setting up an FTP server, or connecting a media player. The Ethernet ports on the TP-LINK N750 operate at Gigabit speeds, enabling flawless HD video streaming. Supported security protocols include 64- and 128-bit WEP, WPA/WPA2, and WPA-PSK/WPA2-PSK encryption. It also supports a number of access management controls including parental controls, local management control, host list, access schedule, and rule management.

Who Should Apply: TP-LINK's N750 offers several high-end features that gamers and media enthusiasts will really like.

Network Standards: 802.11a/b/g/n

Frequencies: 2.4GHz, 5GHz

Maximum Theoretical Bandwidth: 450Mbps wireless, 1,000Mbps wired



Actiontec 500Mbps Powerline Network Adapter Kit (PWR500 Kit)

\$89.99

www.actiontec.com

Why You'll Dig It: Powerline network adapters eschew wireless technology in favor of using your home's existing electrical wiring for transmitting data between two adapters. This pair from Actiontec lets you create a wired network between any two outlets in your home and enjoy data rates up to 500Mbps, which is more than enough bandwidth to support even the most demanding home networking operations. This kit can handle online gaming, HD media streaming, Internet access, and more. Features we like include support for 128-bit AES Link Encryption with Key Management, operational range of up to 300 meters along power lines, and a trio of LED indicators that make it easy to troubleshoot problems.

Who Should Apply: Users with moderate to heavy network usage who experience structural limitations with wireless networks should find a lot to like in the Actiontec 500Mbps Powerline Network Adapter Kit.

Network Standards: HomePlug AV

Maximum Theoretical Bandwidth: 500Mbps wired



IOGEAR Universal 5-Port Wi-Fi N Ethernet Hub (GWU647)

\$69.95

www.igear.com

Why You'll Dig It: The buyer's guide covers plenty of routers, which is great for your wireless devices, but if you have wired devices you'd like to add to your 802.11n home network, then this is the unit you want. The IOGEAR Universal 5-Port Wi-Fi N Ethernet Hub is designed to handle bandwidth-demanding applications such as HD video, VoIP, and console gaming. Features include dual antennas for up to 300Mbps data rates, backward compatibility with 802.11b and 802.11g routers and access points, and WPS (Wi-Fi Protected Setup) to make configuring the device secure and simple.

Who Should Apply: This Ethernet hub is perfect for homes that feature computers and Ethernet-capable devices in more than one room in the house, such as in a second office or at the entertainment center.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz

Maximum Theoretical Bandwidth: 300Mbps wireless, 100Mbps wired



Rosewill RNX-N4PS

\$59.99

www.rosewill.com

Why You'll Dig It: The Rosewill RNX-N4PS is an 802.11b/g/n router capable of handling the demands of gamers and media enthusiasts alike. In 802.11n mode, this router offers data rates up to 300Mbps, but it's also backward-compatible with 802.11b/g devices. Supported security protocols include WPA/WPA2 and AES 64- and 128-WEP with shared-key authentication. The RNX-N4PS also lets you quickly and securely connect wireless devices to your network using the WPS (Wi-Fi Protected Setup) button. A trio of 2dBi omnidirectional antennas helps ensure you get high throughputs at medium and long ranges. You can also use the RNX-N4PS as a wireless router, access point, repeater, or wireless bridge, as you see fit.

Who Should Apply: This router is ideally suited for enthusiasts who want a solid 802.11n router that can keep up with their multimedia demands.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz

Maximum Theoretical Bandwidth: 300Mbps wireless, 100Mbps wired



TRENDnet N150 Wireless Home Router (TEW-711BR)

\$35.99

www.trendnet.com

Why You'll Dig It: The TRENDnet N150 Wireless Home Router is a compact and affordable Wireless-N router designed to handle Internet sharing, online gaming, and file sharing. Built-in GREENnet technology slashes power consumption by as much as 50%, and a variety of modern encryption protocols (including WPA2-RADIUS) and access control mechanisms ensure your home network stays locked against would-be attackers. Other features we like include the WPS (Wi-Fi Protected Setup) button for effortlessly connecting wireless devices to the network, WMM (Wi-Fi Multimedia) QoS data prioritization, and NAT firewall support.

Who Should Apply: This compact but powerful router is perfect for people who want to expand wireless Internet access to their notebook in a small home, dorm room, or apartment.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz

Maximum Theoretical Bandwidth: 150Mbps wireless, 100Mbps wired



Encore Electronics Wireless N300 Router, 5dBi (ENHWI-2AN45)

\$29.99

www.encore-usa.com

Why You'll Dig It: Encore Electronics' Wireless N300 is a surprisingly affordable wireless networking option that doesn't skimp when it comes to the features you want. The router comes with a pair of detachable 5dBi dipole antennas for superior range and enough throughput to handle gaming, Internet sharing, and HD video streaming anywhere, even in large homes. We like that this router features GreenWLAN technology, which conserves energy and helps lower your power demands. The N300 also has security in spades, with support for WEP, WPA, WPA2, and 802.1x high-level WLAN security protocols.

Who Should Apply: This router is ideal for home users who want a no-nonsense way to experience all the benefits of 802.11n and protect their networks with the latest security protocols.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz

Maximum Theoretical Bandwidth: 300Mbps wireless, 100Mbps wired



Rosewill RNX-MiniN2

\$29.99

www.rosewill.com

Why You'll Dig It: This inconspicuous little 802.11b/g/n USB 1.1/2.0 adapter makes adding Wireless-N capabilities to any PC or notebook quick and easy. The RNX-MiniN2 supports 54Mbps in 802.11g mode and 300Mbps in 802.11n mode. When operating in the latter mode, you'll have the bandwidth and range to support HD video streaming, latency-free Internet surfing, large file transfers, and more from any corner of even large homes. Security standards include 64- and 128-bit WEP, WPA, and WPA2. Other features we like include support for the MIMO power-saving mechanism, as well as the ability to quickly and easily make connections using a WPS (Wi-Fi Protected Setup) button.

Who Should Apply: Those looking to add fast wireless networking capabilities to an auxiliary PC or upgrade the wireless capabilities of a notebook PC will want to seriously consider the Rosewill RNX-MiniN2.

Network Standards: 802.11b/g/n

Frequencies: 2.4GHz

Maximum Theoretical Bandwidth: 300Mbps wireless



Inside The World Of Betas

MozBackup 1.5.2 Beta 1

Despite Google Chrome's recent surge in the web browser wars, many power users are still firmly in Firefox's camp, and some use Thunderbird for email, as well. As these programs live on your hard drive, they really need to be backed up. For this, there's no better tool for the job than MozBackup.

First, MozBackup doesn't actually back up your Mozilla-based programs. It "just" backs up your settings, accounts, and data. For Firefox users who sync their bookmarks online, use an online password locker, and know what extensions they use, MozBackup might be of limited use. However, backing up email settings and data is a potentially much bigger job. Think of all your email server and account settings, passwords, any filters and rules, plus all the actual email messages and folders where they're stored.



Whatever Mozilla app(s) you have, MozBackup makes the backup and restoration work extremely easy. Just tell MozBackup what Mozilla-based program and user profile you want to work with, whether you're backing up or restoring data, where the backup file is (or will be), and then put check marks next to what

MozBackup 1.5.2 Beta 1

Publisher and URL: Pavel Cvrcek,
mozbackup.jasnepaka.com

ETA: Q3 2012

Why You Should Care: There's no better or easier way to backup and restore your Mozilla programs' settings.

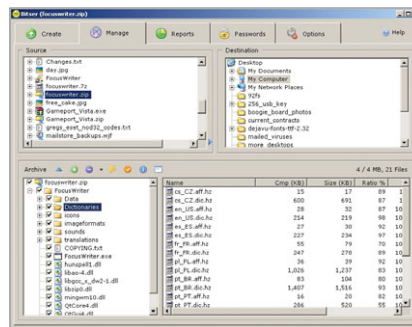
you want backed up or restored, such as address books, cookies, extensions, messages, and so forth.

The latest beta is particularly well suited for massive email collections. We let it back up and restore 10GB of email to copy it from one PC to another, and other than the status bar not filling up correctly, MozBackup moved the mail and all the settings perfectly. ■

Bitser 0.9.6.0 Beta

Does the world need yet another file compression tool? We're inclined to say "No, not really," but one benefit to having so many of these utilities is that you're likely to find one that works exactly the way you want. If want your compression utility to look and feel like a backup tool, then Bitser is for you. (Plus, it's free, so why not check it out?)

Bitser feels like older versions of Novastor's backup products. To create a ZIP, 7z, or self-extracting compressed file, you navigate through the collapsible tree of all your folders and drives on the left pane of the program window. Place check marks next to the files and folders you want added. The right pane displays the contents of your selections. Once you've selected what you want to compress, select a destination,



compression type, and other options, and then click Create to make the file. Installing Bitser adds context menu options in Explorer.

Uncompressing files works similarly, but once you select the compressed file, a second set of file and folder panes appears in the lower part of the Bitser window, where you can simply decompress the file where you like or drag and drop contents

Bitser 0.9.6 Beta

Publisher and URL: The Bitser Group,
www.bitser.org

ETA: Q3 2012

Why You Should Care: If you want your compression program to look like your backup program, Bitser is for you.

out of the archive into specific folders or locations.

Bitser has two noteworthy additional features. The first is a basic password manager, which utilizes Bitser's native 256-bit AES encryption routines to store a simple database consisting of account names, logins, passwords, and notes. The other is a handy one-click tool for converting compressed files from one format into another. Give the beta a try and see what you think. ■



ABYSS
WHITE
CPA-8818WT

CYCLOPS
CPA-8950

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PG-13

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FOR A CHANCE
TO WIN

Upgrades That'll Keep You Humming Along

Longtime favorites Opera, Thunderbird, and iTunes get significant updates this month, and Google Chrome gets ready for the official launch of Windows 8.

Software Updates Chrome For Win8

In advance of Windows 8, and especially its tablet interface, Google releases to developers a compatible version of Chrome that supports the "Metro" touchscreen style for the new OS. In this browser version the tools and tabs are oversized for fat fingers and it supports side-by-side viewing of multi-tasking apps. The build is available through Chrome's developer program.

dev.chromium.org/getting-involved/dev-channel

HWINFO 32/64 5.5.0

The popular hardware diagnostics tools became freeware as of the most recent version, but that hasn't stopped development. Support for VIA VN1000 chipsets has been added, as has support for X79 and various NVIDIA parts. A problem accessing Poulso's SMBus has been fixed, as well.

www.hwinfo.com/news.html

iTunes 10.6.3

This update fixes a problem with first-gen iPad syncing, as well as some problems with iTunes unexpectedly deleting some apps from a device or deleting some playlists. The version also improves overall performance and for Mac users brings the music player up to date for OS X Mountain Lion.

support.apple.com/kb/DL1426

Mozilla Thunderbird 13.0.1

The new and major upgrade of Mozilla's Outlook alternative now lets you upload files to an online storage service and share with friends to avoid massive attachments. This version also lets you get personalized new email addresses from

within the program. The new minimum requirements for Thunderbird are Windows XP with SP2 or later installed.

www.mozilla.org/en-US/thunderbird/13.0/releasesnotes

Multi Commander 2.5

A big release of the file manager boasts 345 changes. Now the Explorer panel can show files in list mode, and file views have line numbers and wordwrap. Un-Zipping files has been accelerated. Updates to the Toolbar are present, and you get a Quick Launch bar onto which you can add specific folders, programs, and commands.

multicommander.com/news/multicommander-v2.5

Opera 12

A global favorite among alternative browsers, Opera's long-awaited upgrade introduces its Themes feature, which lets you skin or customize the look and feel by yourself or via hundreds of downloadable themes. Applications can access your PC camera via the browser. You now can see more clearly the privacy and security policies of sites you visit. All this and the company promises much faster page loading and HTML5 rendering, as well as hardware acceleration options.

www.opera.com/press/releases/2012/06/14

Process Lasso 5.1.0.94

This PC process optimizer lets you manage priorities, and version 5.1.0.94 improves the appearance of the graph depicting CPU utilization in the active process tab. It also fixes a possible crash when executing some searches for a

process name online or locating a process file on disk.

bitsum.com/changelog/pl/changes.htm#latest

Sandboxie 3.72

The utility for keeping processes "sandboxed" away from making permanent changes to your PC gets a 3.70 update that improves usability and file exploration. Compatibility has been improved for Logitech QuickCam, Internet Download Manager, Chameleon Windows Manager, and others. A more recent 3.72 iteration addresses compatibility with Flash 11.3.

www.sandboxie.com/index.php?VersionChanges#v_3_72

Spybot 2.0 Beta 6

The popular spyware detector and cleaner readies for Windows 8 by supporting the next operating system's Security Center. The interface is revised for this major version update with an updated Help system. Master Boot Records now are scanned using the company's SDRootAnalyzer. An Uninstall Wizard has been added and the install routines detect more recent versions of the program.

www.safer-networking.org/en/news/2012-05-10.html

Driver Bay Intel Driver Update Utility

Perhaps unknown to many users, Intel has an online tool that checks your PC and identifies which drivers are in need of updating. The Java-based app works from within the browser to advise on audio, graphics, networking, and chipset drivers.

www.intel.com/p/en_US/support/detect

Adobe Creative Suite 6 Master Collection

Are Adobe's Newest Tricks Magic Or Mundane?

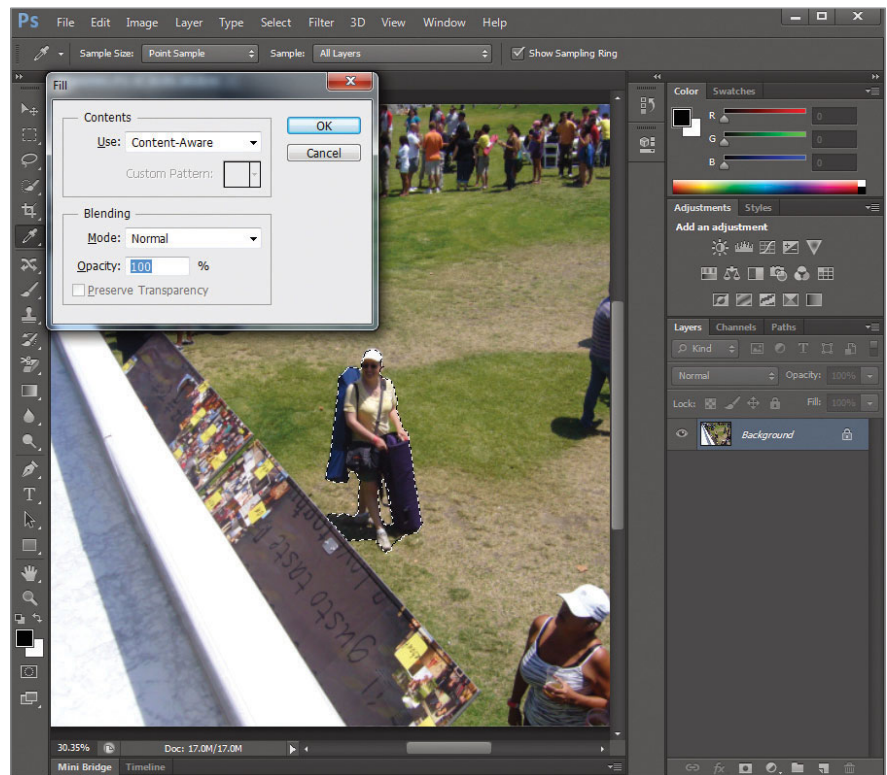
When software vendors churn out new releases on a regular schedule, much like Adobe does with its Creative Suite package of media production tools, skeptics are typically a bit suspicious: Is the brand-new version really new and necessary, or are we really just looking at a new version number with a bigger price tag on the box? In the case of Adobe's new CS6 Master Collection, the version number is new, and the price tag is, well, you know.

Last year, Adobe stopped halfway between CS5 and CS6, releasing a ".5" version of Creative Suite. CS5.5's improved GUI, feature set, and speed at rendering complex images (with the right hardware) won us over. (See page 86 in the July 2011 issue.) This year, CS6 continues improving its GUI, adds more genuinely useful features, and improves speed further, while also bestowing many of its apps the power of "liquid layout"—generating content on a wide variety of devices and screen sizes almost automatically.

Yes, CS6 isn't cheap, and yes, it can be complex. But if your livelihood depends on your ability to create truly professional-looking, leading edge digital and printed content, there is simply no substitute. Let's have a closer look.

You Get What You Pay For (But It's Complicated)

There's no getting around the \$2,599 list price of CS6 Master Collection (henceforth "CS6" for this review), which nearly includes Adobe's entire product catalog; most of our first cars were cheaper. For the price, though, you get a lot: Photoshop Extended, Illustrator, InDesign, Acrobat X Pro, Flash Professional,



Adobe is up to its old tricks with Photoshop Extended, broadening the image-editing software's arsenal of Content-Aware tools.

Dreamweaver, Fireworks, Premiere Pro, After Effects, plus about 10 minor (in comparison) apps such as Flash Builder, Audition, Encore, Prelude, Bridge, and Media Encoder. Bundling is definitely cheaper than buying individually. For example, the standalone version of Photoshop Extended costs nearly \$999, while each app averages out to only \$162 in the Master Collection.

If you still can't shell out almost 2,600 bones, there's CS6 Production Premium

(\$1,899), which focuses on digital content creation and includes Photoshop Extended, Illustrator, Flash Professional, Premiere Pro, After Effects, and nearly all the minor apps. For the same \$1,899, web and print designers can choose CS6 Design & Web Premium instead, which adds InDesign, Acrobat X Pro, Dreamweaver, and Fireworks, but it ditches Premiere Pro, After Effects, and most of the minor apps. If you're sure you're only doing print media, then the full version of CS6

Design Standard will set you back \$1,299 and comes with Photoshop, Illustrator, InDesign, Acrobat, and a couple minor apps.

Of course, most graphics professionals are already using a version of Creative Suite, and Adobe's tiered upgrade prices make things more reasonable. CS5.5 users (whose product is just a year old at most) can upgrade to CS6 for just \$525, while CS5 users will pay just over \$1,049. CS4 users can upgrade their five-year-old version for about \$1,399. Students and educators (homeschool/primary/secondary schools, plus accredited universities and colleges, are eligible) can receive almost 70% off of MSRP, as the Student and Teacher Edition of CS6 costs \$799.

Another option to reduce costs (other than enrolling in a community college course or registering your school-age child as the CS6 user in your household) is the newly expanded Adobe Creative Cloud service. Unlike Google's "cloud" offerings, Adobe's Creative Cloud still has you download and install gigabytes' worth of software to your hard drive, but you have a transient license dependent upon small payments. Pay your monthly fee, and the software works; stop paying, and it doesn't. Plus, on a month-to-month plan, you can start or stop payments anytime. This feels like the perfect setup for freelance artists who only need the software for paying gigs, but even constant users may find it to be more financially manageable.

The service runs \$74.99 a month for a month-to-month contract or \$49.99 a month with an annual contract. However, current owners of CS3 or newer products (even standalone versions), or those qualifying for the student or educator discount, can enroll for \$29.99 a month with contract. Creative Cloud users get 20GB of included cloud storage from Adobe, which includes automatic file syncing between computers and, optionally, other Adobe Creative Cloud users, plus the license lets you use the software on two of your own computers, even if one is a Mac and the other a PC.

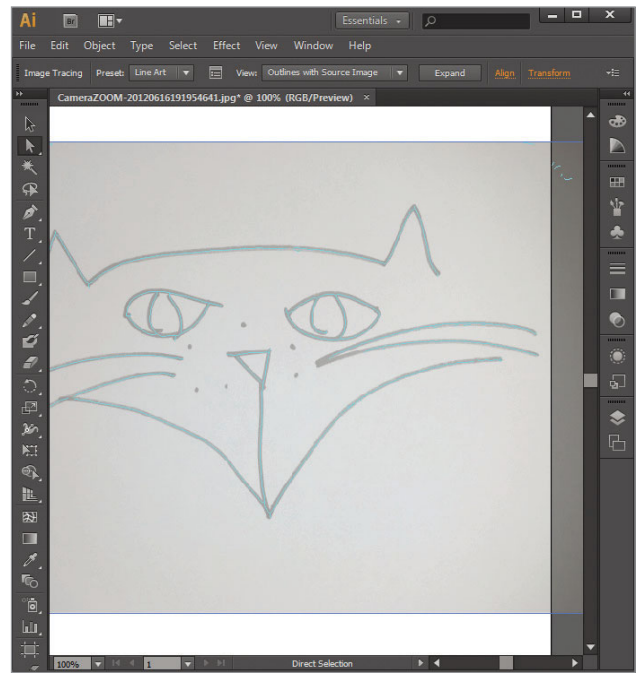
There's also one potentially hidden cost: your OS. In Windows, most of the video-related software requires the 64-bit version of Windows, as do some acceleration features in

Photoshop. WinXP is still supported (subject to the 64-bit issue), but Vista is officially unsupported (it also works, but hope you don't have problems.) Mac users must have OS X 10.6 or 10.7. Both operating systems need a 64-bit CPU (which really shouldn't be an issue for anyone at this point).

Photoshop Extended

Most products with a multidecade history get slower as they add features. Photoshop has actually become faster, and nothing breathes new life into software like speed. The Adobe Mercury Graphics Engine, which previously was only used to accelerate video, now accelerates all sorts of tools and filters into real-time events by taking advantage of your GPU. With even something as mild as an NVIDIA GeForce 8800GT, the Liquify tool provides real-time smearing, and the dozens of artistic filters (and their sliders) render images as quickly as we could think up combinations. This invites artistic experimentation like never before and obviously boosts productivity. The same technology is used for Photoshop's new video-editing abilities, giving it a similar feel to After Effects, but with Fades being the only available transitions.

Adobe increased its number of "magical" tools, including the Content-Aware tools. With nearly no skill, we selected items (like people, trees, light poles, etc.) and moved them from one area of a photo to another, and Photoshop automatically "filled in" the background where the item was and blended with the item's new location. Autocorrection (for example, brightness and contrast) are



Graphics designers will be drooling all over Illustrator CS6's new and improved Trace Tool.

also content-aware, resulting in fixes you're much more likely to approve of.

Other new items include new vector-based drawing tools (lines, text, and other shapes), wide-angle lens correction tools, a new Blur gallery (including nearly automatic tilt-shifting), and much more intuitive tools to shift 2D images into 3D.

Illustrator

Illustrator is the *de facto* standard of graphic artists for two reasons. First, it's received continuous improvement over its 25-year life, receiving feature and stability improvements that make it truly professional-grade. Second, many of its competitors have either bowed out or been assimilated into the Adobe collective. (FreeHand is an example of the latter.) This Illustrator version only has one killer feature: a new Trace Tool.

A Trace Tool converts a bitmap, such as a photo or a scan of hand-drawn art) to vector (that is, line-based) art. It's a huge improvement over the old converter, Live

Trace. The new tool has many preset options (like High Fidelity Photo, Line Art, Shades Of Gray) that look terrific yet are easy to manipulate later. This is a *huge* time saver.

Otherwise, Illustrator is much faster, thanks again to the Mercury Graphics Engine. It's natively a 64-bit app now, too, so it handles huge files wonderfully. Illustrator has moved to a darker GUI, like Photoshop, but you can revert it if you prefer the old look. In addition to these specifics, Illustrator received a lot of tweaks to speed up overall workflow. (Naming layers quickly no longer pops up a rename dialog box, for example.)

Dreamweaver

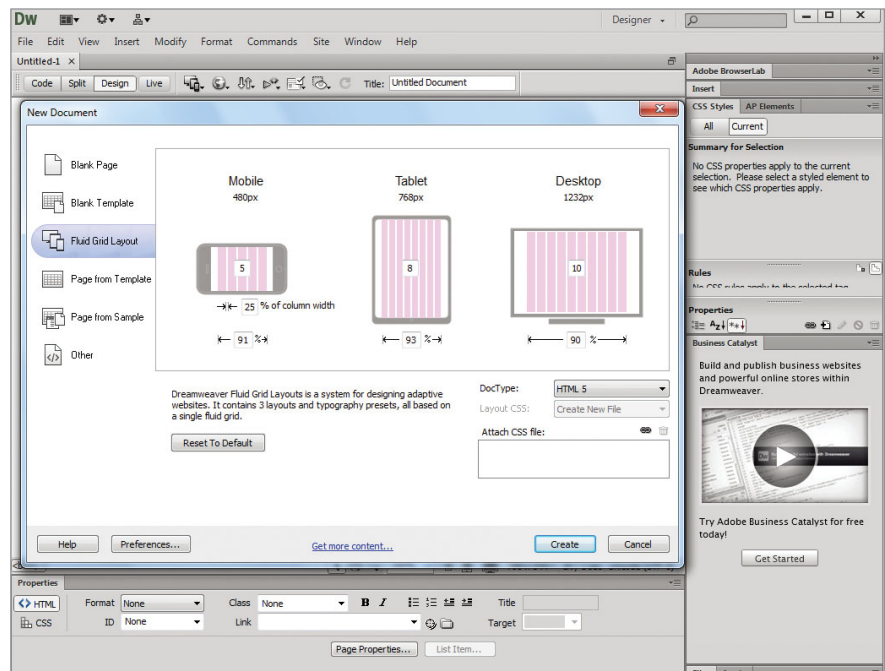
As recently as two years ago, working with HTML was largely easier than it is now. The Browser Wars were largely over, and everyone was still using PCs to consume content. Today, Gecko, WebKit, and Trident browser engines are fairly evenly split, and people view the web on different devices: large desktop/laptop screens, medium-sized tablet screens, and small smartphone screens—the latter two in either portrait or landscape. Assuming you want to create content that flows well across everything, Dreamweaver's new Fluid Grid Layout is a webmaster's dream come true.

Start by assigning your HTML content to grid blocks (designated by DIV tags) and drag and drop the blocks around the desktop/tablet/smartphone screen layouts Dreamweaver supplies. That's when the magic happens. Images automatically resize, text reflows, and sections reorganize based on the browser window or device size.

Other improvements are much appreciated, though perhaps not monumental. The preview window updates instantly as you edit CSS code in corresponding dialogs. The FTP uploader knows more protocols and is multithreaded. Managing web fonts is considerably easier.

Flash Professional

If you remember Adobe's 2011 announcement of suspending development on the Android browser Flash plug-in and focusing on HTML5 development tools, then you may be wondering why there's a new version



We're living in a mobile world, a fact that Adobe is keenly aware of. Dreamweaver CS6 is built to help web designers effortlessly create content across a multitude of devices.

of Flash in CS6 at all. The answer, of course, is that Flash is used for far more than just making animations, videos, and menus inside web pages. Thanks to Adobe AIR, Flash acts as a development tool for Android and iOS applications. And thanks to a series of new exporting tools, Flash Professional can ease the creation HTML5 components and games.

Using Flash Professional to make sprites (small, animated bitmaps, typically used for in-game "characters") is now almost simple. Create a repeating animation as a Movie Clip, choose the Sprite Sheet tool, and specify what scripting language to use (such as Cocos2D for iOS games or EaselJS for HTML5 games), and let it rip. Out pops a single PNG file containing all the sprite's cells, as well as the scripting file needed to make it animate. There are now also tools for debugging with and simulating mobile devices when generating mobile content (including accelerometer and touch simulations).

So, for those still generating "basic" Flash web content, the latest version of Flash alone

isn't worth the upgrade. For everyone else, the changes are welcome.

InDesign

InDesign was originally Adobe's pro-level replacement for PageMaker (the seminal desktop publishing program), but as the world started moving away from purely printed page layouts, Adobe started shifting InDesign's abilities to include digital content. The CS5 and 5.5 versions in particular were dramatic shifts, to the point that it's tough to see if anything changed with CS6.

Much like Dreamweaver, InDesign now has Liquid Layouts, and they work in concert with Alternate Layouts. If you have a Letter-sized portrait layout designed and looking good, you can copy it to an alternate layout, such as iPad portrait or landscape, and the elements automatically reorganize themselves to the new aspect ratio. By itself, this saves time in getting a design off the ground (it still needs an expert hand to look great, in our experience), but by setting some Liquid Layout rules, blocks of content reorganize

themselves attractively and intelligently. Again, more design is necessary to achieve perfection, but it's still a huge time saver.

The Content Collector is the other big new thing. It acts as a "super Clipboard panel," allowing for fast (and if desired, linked) content between InDesign layouts.

After Effects

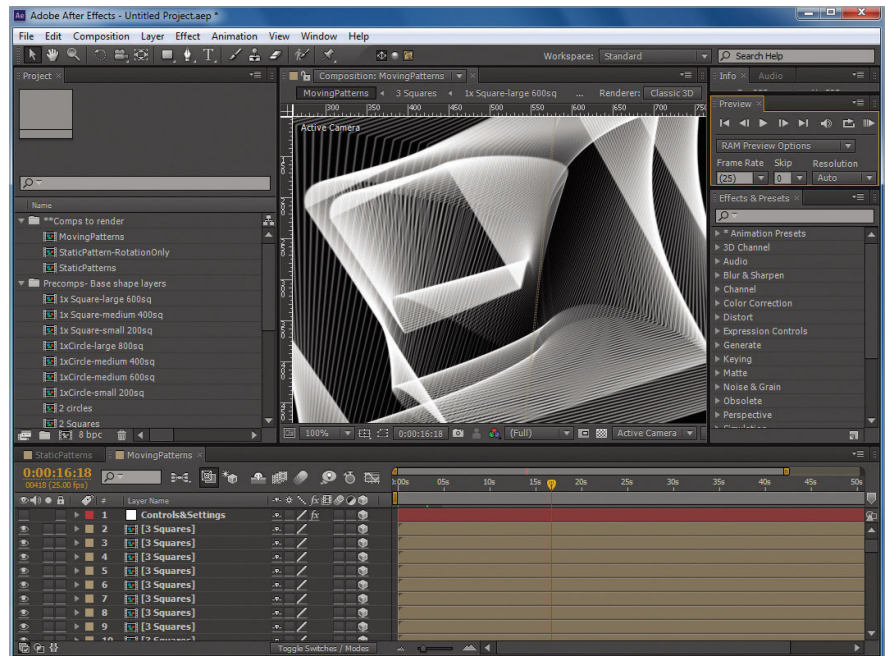
If your videos contain any sort of rendered graphics, After Effects is the tool you want. The new version's speed is nothing less than stunning, but not for the reasons you think. Yes, it too uses the Mercury Graphics Engine to speed up basic redraws, but the Cache to RAM system is completely rewritten and works in the background.

After Effects users will immediately grasp the importance of this, but for those not in the know, after laying down different video tracks and effects over them in the timeline, After Effects "reviews" the layers (which can take a while, depending on the complexity) and caches the effects in RAM, drawing the famous "green line" over those areas in the timeline you can then finally view and inspect at real-time speeds. Now, After Effects can cache a second clip or file in the background while you work on the first (so it will be immediately ready to work on after you're done with the first). Also, when you make changes that used to require After Effects to recache the whole clip, it can now calculate what cache it can keep and instead just recache changed layers and items.

The results are simply this: There's a lot less waiting and pacing around the office, and testing out different effects is orders of magnitude faster than before.

Premiere Pro

With its classic non-linear video editor, Adobe keeps nipping at the heels of Avid and Apple. Some of the upgrades are exclusively geared toward professionals. Do you really have a \$43,000 RED camera whose native format you've been unable to use until now? We don't, but that's OK. Sometimes, it's easy to forget that CS6 is geared for people whose livelihoods depend on software with every feature under the sun.



After Effects' Global Performance Cache will have you spending less time waiting on your hardware and more time polishing your masterpiece.

Other updates are right up our alley, such as the Rolling Shutter Repair effect (also in After Effects). You know the video you've taken with your phone (or other CMOS camera) that makes straight lines look curved? Let Premiere Pro nibble at it for a few minutes, and the distortion goes away. We also like the new layout of the Source Monitor and Program Monitor screens during editing, side-by-side and as large as possible, going full-screen with just a keystroke.

A Roundup Of The Rest

The full Master Collection also comes with many tools that can only be considered minor compared to apps like Photoshop:

Fireworks. The former Macromedia bitmap editor lives on as a website and mobile application mockup design tool.

Audition. Adobe's Soundbooth replacement has real-time clip stretching and a wider array of sound filters.

SpeedGrade. This video color correcting/altering app has a new UI and the GPU-accelerated Lumertri Deep Color Engine.

Encore. Abode's disc authoring software natively supports 24p frame rates and 4K and 5K mastering.

Media Encoder. This media transcoder converts formats to different media devices and PC formats.

Prelude. Prelude streamlines production duties, offering benefits like customizable markers, transcoding upon ingest, keyboard-driven logging, and more.

The Verdict

Broadly speaking, Adobe CS6 Master Collection is simply the best collection of media creation tools ever released, and if you earn your living creating media, then you'll want to buy (or upgrade) to this immediately. For advanced home users, if you think you'll use at least two of these Adobe apps regularly, get the suite that best matches your workflow, or sign up for the online license and never look back; you'll be glad you did, despite the high cost of entry. ■

BY WARREN ERNST

RUBY

- Dimension: 180(W)x420(H)x420(D)= 7.10"x16.55"x16.55"
- Max. Motherboard size: 12"x10"
- 4 open 5.25" drive bays
- 1 open 3.5" drive bays
- 5 hidden 3.5" drive bays
- Built-in 2 front USB 2.0+Audio Output
- An 80mm blue LED fan was installed in the back
- This case comes with a LOGISYS black coated 480watts SATA Cable power supply, compatible with 20/24pin MotherBoard
- Rear Fan Mount x1 for 80mm / 90mm Cooling Fan
- Toolless Thumb Screws
- Clear Side window w/ precut Vent and 80mm fan mounting grill.



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NP19

BAMBOO LAPTOP
COOLER

NP2600

PURE ALUMINUM
LAPTOP COOLER

NP8



368 SOHO

- Dimension: 180(W)x420(H)x450(D)= 7.10"x16.55"x17.75"
- Max. Motherboard size: 12"x10"
- 3 open 5.25" drive bays
- 1 hidden 5.25" drive bay
- 6 hidden 3.5" drive bays
- Built-in 2 front USB 2.0+Audio Output
- An 80mm black fan was installed in the back
- This case comes with a LOGISYS black coated 480watts SATA 12CM fan power supply, compatible with 20/24pin MotherBoard
- Front Fan Mount x 1 for 80mm / 120mm Cooling Fan
- Rear Fan Mount x 1 for 80mm / 90mm Cooling Fan
- Side Fan Mount x 1 for 80mm Cooling Fan
- Toolless Thumb Screws

WWW.ELOGISYS.COM

LOGISYS



Microsoft Security Essentials 4

In Microsoft Security Essentials' favor, no one knows Windows better than Microsoft; Microsoft Security Essentials should be able to tightly integrate with Windows better than any third-party antimalware utility. With the fourth iteration of Redmond's homebrewed security tool out in the wild, we decided to once again take Microsoft Security Essentials for a spin to see how the latest release stacks up. Our verdict: We recommend Microsoft Security Essentials 4 to gamers who already have clean systems and lack security software.

Microsoft Security Essentials is totally free. It only covers antimalware (viruses, rootkits, and spyware) protection, but we're OK with that. Windows' own firewall (especially the one found in Vista and Win7) works just fine (and it's supplemented by the hardware firewall found in the routers nearly everyone uses, anyway), most modern browsers contain good antiphishing features, and the top webmail providers have good antispam abilities; so for many folks, the extra security features of full-blown security suites may not be totally necessary.

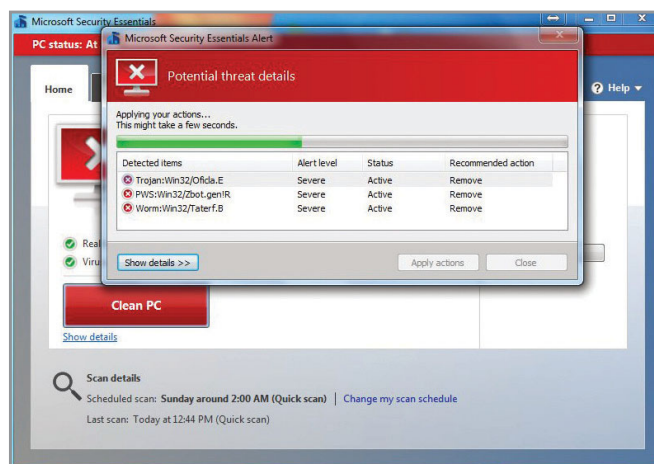
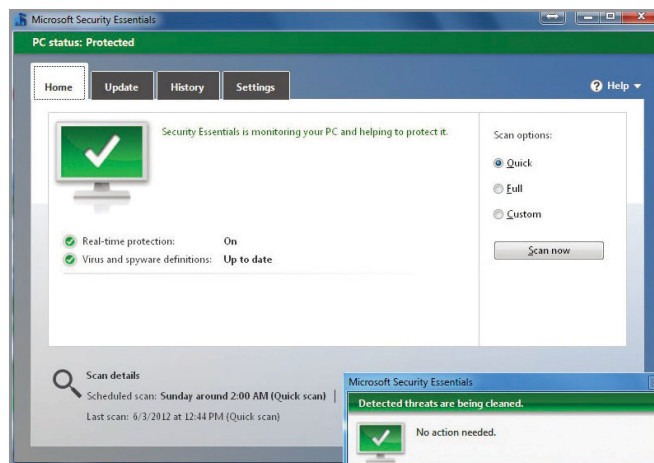
This, probably combined with Microsoft's good working knowledge of Windows itself, results in a relatively lightweight security product that produces the best 3D gaming benchmarks we've ever seen. We witnessed a mere .04% decrease in the 3DMark Vantage benchmark score, and the Counter-Strike: Source frame rate drop is just 0.18% over no security software at all. Bravo, Microsoft!

Usability is universally good until Microsoft Security Essentials actually detects malware. After that . . . it depends. Microsoft Security Essentials' window opens instantly and is well laid out. A big colored bar at the top of the window is either Green (all is well), Yellow (it has a question for you, but it can wait), or Red (an immediate response

to a problem is necessary), and the four main tabs of the program make sense. The Home screen lets you know that protection is on, when the last update and scan occurred. You can initiate a new scan or change the background scan schedule. Scheduled scans only occur when CPU usage is less than 50% by default. The History tab shows what malware the software has quarantined or deleted.

Some security software titles make a big deal about announcing trivial security issues with garish pop-ups and alarmist language in an effort, we think, to convince users what a great job they're doing in order to justify future repurchases. Being free, Microsoft Security Essentials doesn't have to resort to such shenanigans. That said, we wouldn't mind seeing Microsoft polish Microsoft Security Essentials' reporting methods. While testing with live malware samples, the software sometimes quarantined files silently; at other times, it displayed a calming "Detected Threats Are Being Cleaned. No Action Needed" pop-up.

When it comes to malware detection rates, we defer to the antivirus certification organizations that test detection against



millions of virus samples (rather than the mere hundreds collected from our honeypots). AV-Comparatives.org gives Microsoft Security Essentials a STANDARD rating.

In the end, you definitely need antimalware software on your Windows PC. If your brand-new gaming PC needs something lightweight, Microsoft Security Essentials 4 is perfectly OK. ■

BY WARREN ERNST

Security Essentials 4

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Microsoft
www.microsoft.com

LEPA 
Fan. Cooler. Power.

The leopard, *Panthera pardus*,
is a member of the Felidae family.

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70D

Power – 1600W Gold Effi. Full Modular Cable • LEPA CASINO 4C – 4-Color LEDs, PWM Function • 70D – Barometric Oilless Bearing, 70°C Resistance

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Tracking The Trackers

With Microsoft's controversial announcement in June that it would turn on by default the "Do Not Track" flag in its Internet Explorer 10 browser, the issue of online tracking blew up yet again. At issue now is who should be in control of what part of the cookie-dropping and user behavior profiling that is an essential part of all website analytics and ad targeting. In recent years, newer technologies for targeting and buying and selling advertising online have made the business of user tagging and tracking more complex than ever. In the digital marketing industry, a famous

"Luma Chart" (named after the Luma Partners investment advisors) lays out the number of different companies now involved in targeted advertising. So many layers of data providers, ad networks, ad servers, and publishers are now a part of the process of putting a simple ad on a web page that cookies are being shared liberally across sites and providers. It has become just as complex for conscientious users to monitor this activity on their own browsers. Here, then is a quick guide to some of the basic tools users might try.

Spook The Spooks

Among the oldest and most used trackers is Ghostery (www.ghostery.com), which plugs into your browser to expose and control trackers. Ghostery has full detection of the major techniques for tracking within the Firefox, Safari, and Google Chrome browsers, with limited detections in IE and Opera. Once installed, the tool appears in your browser toolbar. Clicking into Options will let you view all 820 online entities Ghostery detects and even toggle blocking on or off for each one individually.

We found the Firefox Ghostery extension the most evolved and easiest to use. Clicking the ghost icon near address bar brings up a menu that lists each tracker the software has detected, providing a cascading menu for each that shows you the script that the source is running and the option to block it on the fly.

If you click through to learn more about any given tracking source, Ghostery gives you a page that not only outlines the company but also outlines what data is being collected. For instance, all of those Twitter, Facebook, and other social sharing buttons you see on article pages across millions of sites online can also record in their cookie that you were on this page, whether you clicked the sharing button or not.

Playing Games With Facebook

In addition to its status as a leading social network and online destination, Facebook is a platform for other publishers, including social game and app makers. These companies build programs that sit atop the Facebook pages but can also collect data for themselves. The privacy monitor PrivacyChoice (www.privacychoice.org) recently launched a Facebook app of its own that assigns privacy scores on a score of 1 to 100 to other apps. Head to apps.facebook.com/privacyscoreapps and you can either mouse over some of the popular apps displayed on the page for quick scores or search for specific apps and get granular detail on their policies and with whom they share data.

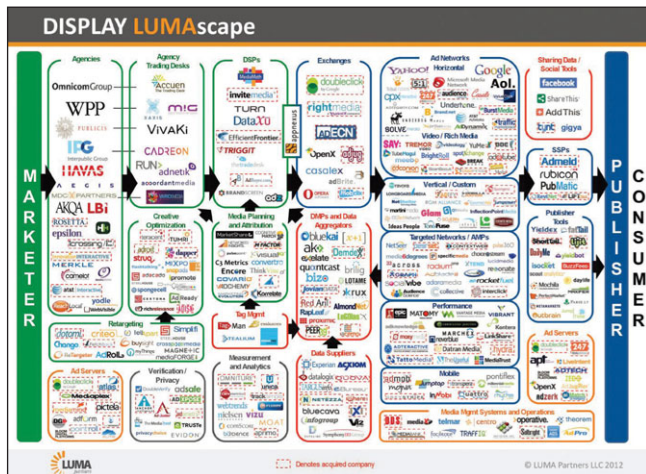
Ad targeting networks work within Facebook apps, as well, so this tool gives you a good idea who is present. PrivacyChoice monitors the data collection, retention, and sharing policies across all of the major networks. It rates the comprehensiveness of the networks and delineates all of the various policies each network practices, and these factor into an app's overall score. For instance, Farmville gets a score of 84 out of 100 even though 50 trackers are detected, because most of the associated networks and data collectors anonymize your usage history and give you a reasonable way to opt out.

Registry Tip Of The Month

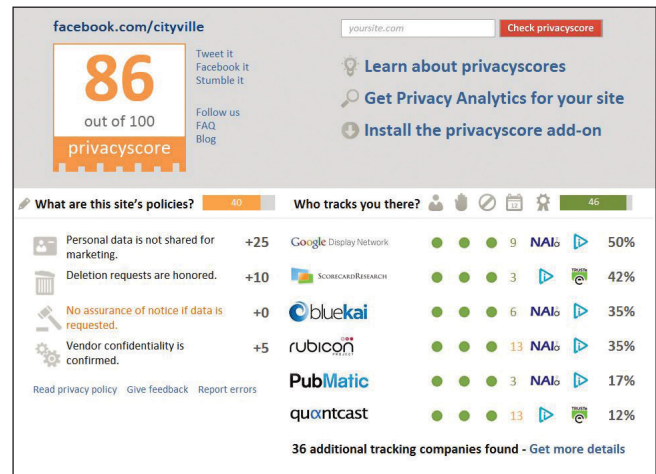
Tired of Aero Snap? For some Windows 7 users, having the OS dock your current window to the left or right half of the screen or maximize when you drag the window to the top of the screen has become an everyday convenience. (ED: *This was totally my idea, by the way.*) For others, it just ends up maximizing and resizing windows when they least expect or want it. If you fall in the latter category and want to turn off the feature, open your Registry and go the key `HKEY_CURRENT_USER\Control Panel\Desktop` and look for the value `WindowArrangementActive`. Change the Value Data from 1 to 0 to toggle Aero Snap off. This requires a reboot to take effect.

Windows Tip Of The Month

Oops, did you just close a browser tab by mistake or use the "close other tabs" command on a full run of open tabs in your browser? Try the near-universal CTRL-SHIFT-T combo to restore the last open tab in Firefox, Chrome, or IE. If you have shut down multiple tabs by mistake, use the command repeatedly to reopen the tabs you have closed in this open browser window.



This infamous "Luma Chart" outlines the number of companies and processes involved in serving a simple ad to you on the Web. And almost all of those entities are dropping cookies or sharing data about your browsing habits.



PrivacyChoice.org recent released a Facebook app that tells you how the most popular other Facebook apps track you and share data.

This Message Will Self-Destruct

If you're looking for a handy tool for passing along sensitive information, such as passwords and account numbers, check out Burn Note (burnnote.com). This site prompts you to create a secure message then lets you send a one-use-only link to your intended recipient. Once this person uses the link to call up the message in her browser, she has only three minutes to view it before it disappears. Burn Note says that its then permanently erases the data from its servers. You can fire off messages anonymously, or you can create a Burn Note account, which provides the added benefit of confirmation notices when recipients access your messages.

Try The Mail Cops

The advertising industry has been entrusted for now with policing itself online. Most of the major ad networks that track and target users have signed on to a program that alerts you to the presence of behaviorally targeted advertising on a page and puts icons on those ads that let you opt out of that network specifically or of all

participating networks at once. Go to www.aboutads.info/choices to scan your PC and determine which of over 100 companies may be tracking you. Descriptions and opt-outs are available for all of the networks.

Google Without Google

Google knows more about your web search and browsing history than any entity on the web. Perhaps you are OK with that, but now that Google has unified all of its data across platforms, your search histories and recommended queries can inform results wherever you use Google. But what if you want to take some of the searches off of the Google grid? Try Startpage (startpage.com). This service runs your searches through Google but without recording or passing along your IP address. You can also set up Startpage as the default search engine in Chrome.

Duck Google

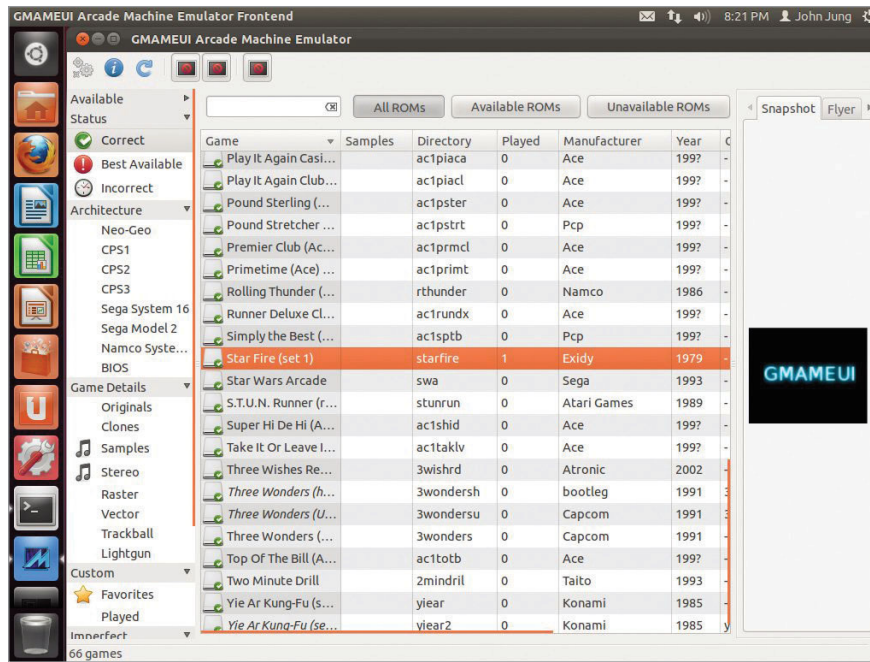
One way companies get data to add to their profiles of your online behavior is the sharing of search query data with the sites that you click through to from

your search results page. A one-person search engine company, DuckDuckGo (duckduckgo.com) has become a darling among technorati of late because it does not track and pass your search history, nor does it use your behaviors to skew results. In look and results it tries to recall the early days of Google.

Everyone Still Has A Fingerprint

The Electronic Frontier Foundation has been running an experiment at panopticlick.eff.org to demonstrate that users can be tracked without cookies. "Device fingerprinting" can identify a user simply by associating that user with the unique combination of operating system, software versions, and configurations that a browser communicates to a site whenever you visit. The average browser is communicating 18.8 bits of information to sites with a very low probability that any two browsers will have the same fingerprint. The Panopticlick site gives you a read on your device, surveys the unique profile your browser shares with any site, and calculates the level of uniqueness. ■

Insert Coin



GMAMEUI provides a graphical interface for configuring and playing games on MAME.

Today, we can play videogames anywhere—our computers, our consoles, our tablets, and even our phones. No matter where you are, you can generally get your game on. Decades ago, when computers were just entering the home, our gaming choices were much more limited.

Back then, options for gaming were essentially limited to PCs and consoles. However, the graphics and processors available for the home were significantly less powerful, and not just less powerful by today's standards. Back then, home users had to settle for basic graphics, which meant that playing games at home left something to be desired. At the time, if you wanted to play the latest and greatest games, you went to the arcade.

With the advances in technology, of course, it's now possible to play those games from yestercenury on your Linux box. Mountains of classic games released over more than a 30-year span are now available, and you don't even need to get out of your chair to get them. This is possible with MAME (Multiple Arcade Machine Emulator), an emulator of a wide variety of arcade platforms.

Gaming At The Time

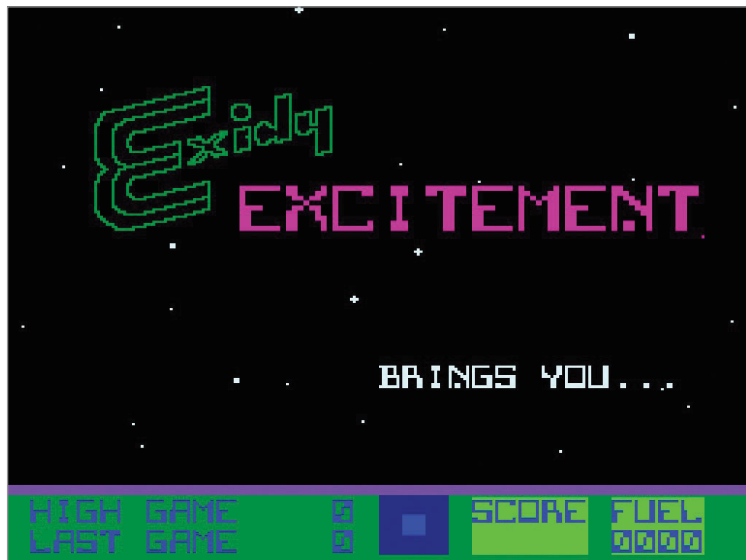
From the mid-1970s until the mid-1990s, the best videogames around were found in arcades. Dedicated gaming machines and computers were starting to make inroads into the home, but they paled in comparison with arcades'

offerings. Gaming consoles had low-resolution graphics with a handful of colors, as well as very weak processors. Home computers had higher-resolution graphics and more processing power, but they still trailed arcade games by a wide margin.

During those decades, with only a few exotic exceptions, playing videogames at home was a one- or two-player experience. Not only could arcade games frequently accommodate more simultaneous players, if you went to the arcade, you might run into other people and hang out while either playing or waiting in line. As such, the video arcade became a sort of a gathering place for early gamers.

A Brief History Of Arcade Games

In the beginning, coin-operated games were meant to entertain people for short intervals. That usually meant that games consisted of a single "level," played over and over, becoming more challenging as the player progressed. This is why a lot of the early arcade games were endurance games. There was no actual end to the game until you lost all of your men, ships, etc. Pac-Man obviously has the same maze for every level; the ghosts simply move faster with each level. So, if you know the correct patterns to use for every level, you could, in theory, play it indefinitely. (In practice, many arcade games, including noteworthy titles such as Pac-Man, Dig Dug, and Donkey Kong, had programming errors that made them unplayable if a player advanced too far. This phenomenon is commonly known as a kill screen.)



Star Fire is one of the free arcade ROMs that you can play with MAME.

As they became more popular, arcades turned into popular attractions. In an effort to make games more profitable for arcades, manufacturers altered the games to take in more money. The more quarters people pumped into the machines, the more money they made for the establishment. Game manufacturers responded by building storylines into games, adding timers to levels, creating simultaneous multiplayer games, and developing unique controllers. The intent behind these changes was preventing any one person from playing a machine for hours on a single quarter.

As computing power improved, home consoles eventually caught up to the capabilities of the arcade machines. By the late 1990s, the home gaming market had all but wiped out the arcade games.

Return To The Arcade With MAME

If you want to relive the golden age of arcade games, you'll want to get MAME. It's a completely free program that will emulate many of the arcade hardware from the past 30 years. MAME handles joysticks and mice and can even emulate the sounds of the machine if that particular game's emulator is up to the task.

Because of its noncommercial status, getting MAME can be a challenge depending on which Linux distribution you're using. Some will have builds of MAME ready for your flavor of Linux, while others won't support it directly. However, there are lots of third-party developers who port MAME to the various Linux variants and then make those ports available to all. So if you can't find a

native MAME build for your version of Linux, do a quick search on the web and you should find something relatively quickly. If all else fails, you can go to mamedev.org and download and build it for yourself.

Because MAME is an emulator of arcade hardware, you're going to need some ROMs from old arcade games to work with. Legally speaking, ROMs of arcade games are still covered by copyright laws. That means that the only legal way you could use the ROMs is if you asked for permission from the copyright holders. If you were to get ahold of the ROMs by any other method, you could face possible litigation for copyright infringement. A handful of companies have released their ROM images free to the MAME developers, so there are some games you can play without the worry of being sued. There are some sites on the Internet that provide complete sets of ROMs suitable for use with MAME.

Another hurdle when dealing with ROMs for MAME is the version of MAME and the ROM(s) in question. Because MAME is under constant development, the ROM images have to match the version of MAME. If you get some ROM images for an older version of MAME than you're using, you may not be able to use them.

By default, MAME is a console-based application, which means that it's all text-based. To run MAME, you need to make sure that you have the complete ROM images copied to a location MAME is configured to look for. After that, bring up a terminal window and type **mame [name of game]**. If MAME doesn't recognize the name of the game, it'll give you a list of possible matches. Alternatively, you can just type **mame** by itself, and it'll show a list of available games. If you'd rather have a nice GUI to take care of all of MAME's configurations and such, there are a number of graphical front-ends available.

MAME is a rather unique emulator because its only goal is to make it possible to play old arcade games. Find your old favorites, load them up, and have a blast (from the past). ■

INFINITE LOOP

A Proposal With Style

This gent's method of popping the question is going to be tough to top, fellow nerds. Robert Hall donned his Bender helmet/mask, fired up his video camera, and recited his proposal to girlfriend Rachel Smith . . . in binary. The string of 1s and 0s, which is too long to reprint here (use your favorite English-to-binary translator and see for yourself), translates to "Rachel, you are awesome! Will you marry me?" The video became a smash hit on YouTube, and, most importantly, she said "Yes."



SOURCE: WWW.NEWSSTORY.CO.UK/5196/2012/02/15-THIS-THE-GEENEST-PROPOSAL-EVER



Yeah, we know you have blogs to post, video to encode, reports to write, and code to compile. We do, too, but you have to take a break once in a while (and maybe blow some stuff up). That's why each month we give you the lowdown on what to expect from the latest interesting PC and console games.

DIABLO

Another Old Favorite Returns —by Chris Trumble

\$59.99 (PC) • ESRB: (M)ature • Blizzard Entertainment • us.battle.net/d3

Most game publishers love recycling their best-selling IP, but very few have perfected this process the way Blizzard Entertainment has. Of course, Blizzard has had the advantage of massive streams of recurring revenue from World of Warcraft for many years now, and as a result hasn't had to churn out yearly or even biennial sequels the way many companies do. The venerable developer has been working on the third installment of one of the biggest PC game franchises ever made for more than a decade now, and the time was well spent.

Diablo III breaks little new ground, either in terms of its story or gameplay. But it does take the time-tested isometric-dungeon-crawl-bolted-to-a-random-loot-generator concept to new heights, thanks to a level of polish evident in every aspect of this game that's simply staggering. Blizzard knows its strengths and willingly plays to them in everything from the game's UI and menus to the predictably gorgeous CG cutscenes and excellent sound design.

The story finds Tristram, the unfortunate town where the events of the first Diablo game unfolded, plunged back into darkness when what appears to be a falling star shoots deep into the earth inside the cathedral, waking the nearby dead in the process. Your character shows up to investigate this phenomenon and quickly becomes entangled with the town's plight as you take up quests to assist its inhabitants. As you discover the true nature of the falling star, greater mysteries are revealed, leading up to (non-spoiler alert!) an eventual confrontation with the titular lord of darkness.

Diablo III's slightly retooled character class selection provides a nice variety of play styles, and within each class waits an addictive progression of abilities that you unlock as your character gains levels. As each new ability slot becomes available, you must choose which of the abilities you've unlocked to populate it with (you can change back and forth anytime), and you can modify the abilities themselves with skill runes that also become available via progression.

The result of all of these customization options is a wealth of opportunity for players who enjoy experimenting with differing skill combinations and tinkering with various skill runes to find skill sets that fit their particular style of play. It's also important to note that each class has skills that work better in solo play than in a party and vice versa.

Of course, no discussion of any Diablo game would be complete without talking loot. As Blizzard's site points out, "Diablo is all about the drops." Some players will find this truer than others, but at the end of the day, the compulsion to progress in levels and through the game's story is at least partly fueled by a desire to uncover new, shinier weapons and armor. Weapons serve as stat decks even for casters, so no matter what class you play, better loot equals a more effective, cooler-looking character.

Like its predecessors, Diablo III revels in itemization; unlike the previous installments, however, Diablo III provides an auction house feature where you can go to cut out the middleman (the game's RNG drops and/or in-game artisans who can craft items for you). You can sell your items or buy from others in either a gold auction house (where you bid and buy with in-game currency), or a real-money auction house, where you bid and buy with dollars.

Whether or not paying real money for in-game stuff is your bag, Diablo III is a finely crafted, highly engaging game that offers many, many hours of solo and multiplayer fun. ■



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MAX PAYNE 3

\$59.99 (360/PS3/PC) • ESRB: (M)ature • Rockstar Games • rockstargames.com/maxpayne3

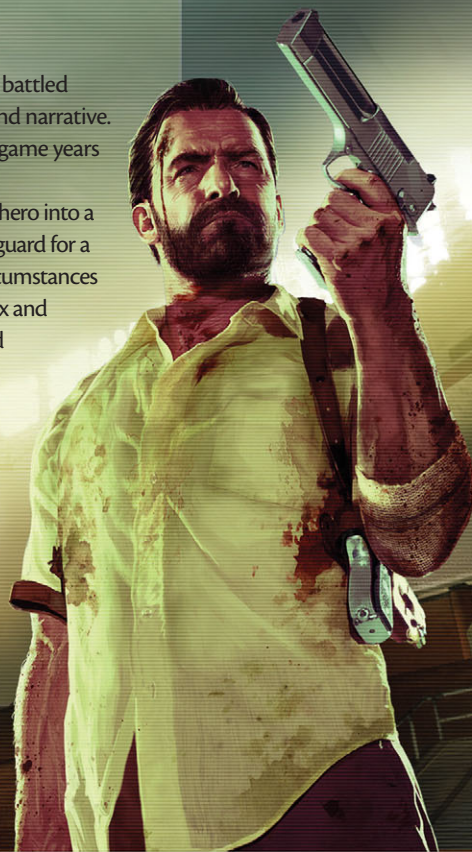
Welcome To The Bullet Ballet —by Dr. Malaprop

The notable aspect of gameplay in 2001's Max Payne was the introduction and use of Bullet Time as Max battled through junkies and the mob. Its sequel arrived in 2003 with improved combat mechanics, technology, and narrative. It too ended in tragedy that led to Max's continued downward spiral, resulting in the man we rejoin nine game years later in Rockstar Studios-developed Max Payne 3.

This Max is older, heavier, and so very tired. The tragedies he's experienced have turned this former police hero into a man addicted to alcohol and painkillers. And his relocation from New Jersey to São Paulo to work as a bodyguard for a wealthy Brazilian family was forced rather than chosen. Max plans to make the best of his easy living, but circumstances disagree. Before long, our hero is in one bad situation after another. Now, we have even tighter control of Max and a proper cover system, which you'll need to rely on to survive. Max is not a bullet sponge, though, so to avoid reloads you're going to have to remember that enemies are aggressive and will flank you in cover. Thankfully, developers have provided options for your aiming reticle to simplify enemy takedowns.

Visuals, animations, and audio are top-notch. For example, Max Payne 3 no longer uses the noir comic style of the previous games. Rather, highly stylized in-game engine cutscenes mask load times and transition seamlessly into gameplay while telling the story. Max tells his own story, and this time around the dialogue is of substantially higher caliber than in preceding games. The new multiplayer modes are a first for the franchise (our favorite was the clan-style Gang Wars mode) and permit use of Bullet Time.

The game's focus, adrenaline, story, quality, style, and action come together as something special in Max Payne 3: The Masterpiece Of Blood and Bullets. ■



TOM CLANCY'S GHOST RECON FUTURE SOLDIER

More Modernist Warfighters —by Dr. Malaprop

\$59.99 (360/PS3); \$49.99 (PC) • ESRB: (M)ature • Ubisoft • ghost-recon.ubi.com/gr-portal

After a five-year hiatus, Ghost Recon is finally back on the console. The single-player campaign focuses on a U.S.-focused threat that's escalating to a global level. As we've come to expect in modern military shooters, you'll fight through a variety of exotic locales. Starting in Zambia, you'll work your way through Nigeria, Pakistan, Norway, and Russia.

Future Soldier features a wide variety of mission types, support for co-op campaign play, and some very entertaining high-tech gadgets, including optic camo suits, synchronized kills shots, UAV drones, and Warhound, to name a few. If that's not enough, fiddle around with up to thousands of gun combinations to design nuanced in-game weapons.

We liked our squad AI and having the ability to tag enemies before sending teammates after them. The AI squad members were also less likely to be detected during stealth missions—especially important because detection during a stealth mission required a mission restart (not a design philosophy we wholeheartedly embrace).

Future Soldier lacks the polish we've grown used to from big A-list shooters. Texture issues were clearly visible on the console versions, so our hope is that the PC version (becoming available as we go to press) cleans up the mess. The game is one coat of paint away from beautiful. Still, it animates and controls very well.

There's also the now-ubiquitous Horde-style mode, called Guerilla, where you and up to three additional players take on 50 waves of enemies. The competitive multiplayer with four object-based modes is where the developers have spent a lot of time. However, you'll want to play with others who can stick to playing their combat roles. At the end of the day, the primary reason to buy and keep Future Soldier is multiplayer. ■





Sins of a SOLAR EMPIRE REBELLION

\$39.95 (PC) • ESRB: n/a
Stardock • www.sinsofasolarempire.com

Rule The Galaxy —by Barry Brenesal

They don't call them "RTS clones" for nothing. Most RTS games employ identical strategies to accomplish the exact same objectives, using units that differ only in their appearance. There are a few excellent exceptions, of course; one of these is the Sins of a Solar Empire franchise. It adheres to the premises of the genre, laid out in *Dune II* way back in 1992, but adds plenty of well-conceived and executed ideas to keep things interesting.

For example, although there are only three races in the galactic-level SoaSE, you can pay pirates to attack other players. These will use the funds you generously provide to upgrade over time, which is great for you until your opponents return the favor with bounties for attacking your empire. Then, there's diplomacy involving a large range of treaty types, along with the ability for human and AI players to offer missions that, when accepted by another side, raise their diplomatic relationship slightly. Each of the three factions in vanilla SoaSE has two tech trees, for civilian and military use, but that was expanded with the Defense tree in the first expansion and the Diplomacy tree in the second. There are no prebuilt campaigns included with the game, but with six victory conditions, hordes of ship types, artifacts, and maps that permit from two up to 10 players (human and AI), dozens of maps of different sizes and the ability to create your own, replayability is considerable.

Rebellion is the third and most recent expansion to the series and the first that can be played as a standalone. It incorporates all the features found earlier in the franchise, but if you have the other two SoaSE expansions, Entrenchment and Diplomacy, it adds very little—rebel versions of the three main factions, a few new ships, many minor but helpful tweaks, etc. If you haven't tried SoaSE yet, however, its value both in standalone and multiplayer mode is exceptional. ■



Dungeons of Dredmor

\$7.49 (PC) • ESRB: n/a
Gaslamp Games • www.dungeonsofdredmor.com

Dungeon Crawling With A Wink & A Nod —by Barry Brenesal

Rogue appeared in 1980, and rogue-like games have since become a fairly common genre—right up through *Diablo III*. They're usually single-character, turn-based dungeon crawls, characterized by randomly generated levels, items, and enemies each time you play. There are many profession skills and level-ups to choose from, various quests, and a boss monster at the end to supply the greatest challenge. One rogue-like you might not have heard of is *Dungeons of Dredmor*, a great send-up of the genre, and the most delightfully funny (yet seriously designed) computer game I've played since my first reviews in 1978.

There are over 40 widely varied skills—everything from Archery and Dual Wielding to the more esoteric Killer Vegan and Emomancy ("Harness the power of whatever, and like, stuff"). You'll have 15 dungeons of increasing difficulty and populated by a wide assortment of animals, demons, undead, golems, and other assorted fiends. We're especially pleased to note the presence of the dreaded Fell Carrot.

Every game is designed for choke points that force the player to make decisions; *Dungeons of Dredmor* is no exception. It provides 48 inventory carry slots, plus nine for quick use, but you'll find literally hundreds of different items sitting around everywhere, begging to be picked up, each with its own purpose and utterly ridiculous description. Then, there are the altars to visit, including Inconsequentia, Goddess of Pointless Side Quests; the many insults hurled by your enemies ("Your eyebrows will not save you, this time!"); and a demonic pig in a checkered zoot suit who runs the stores you find. We also like the engine that supplies *Diablo*-parodying unique names to items, usually something along the lines of "Iaaida, the Storm of Quiche Builders."

Beneath it all is a very solid game, with decent graphics, good music, many types of object crafting, lots of strategy, and a great deal of fun. *Dungeons of Dredmor* is cheap, addictive, and utterly silly. What more could you want? ■



YESTERDAY

A PENDULO STUDIOS GAME

Teleportation & Twists
—by Dr. Malaprop

\$29.99 (PC) • ESRB: n/a • Focus Home Interactive • yesterday-game.com

Pendulo Studios, the developers behind the Runaway series, are looking to Yesterday as a way to do something different and less comedic in the adventure gaming space. Yesterday's darker tones become apparent very quickly right from the intriguing start and stay constant to the end game. Investigating satanic cults and tracking down a serial killer don't add much levity, but that's exactly the departure the Spanish developer intentionally takes with Yesterday.

Yesterday cycles the gameplay through each of the three primary characters as you progress, but most of the focus falls on amnesiac cult expert John Yesterday. Through him you'll have playable current-day and flashback sessions. Yesterday takes some liberties with game design. For example, rather than slowly traipse across a room, you are instantly teleported there. Goodbye wasted animation.

In-game pacing sometimes feels uneven, and design does suffer from hot spot searches. Fortunately, the in-game hint system mitigates getting stuck, and by the time the story wraps up, the narrative becomes clearer. Yesterday also features multiple endings, which is a nice touch. Overall, a solid win for adventure fans. ■



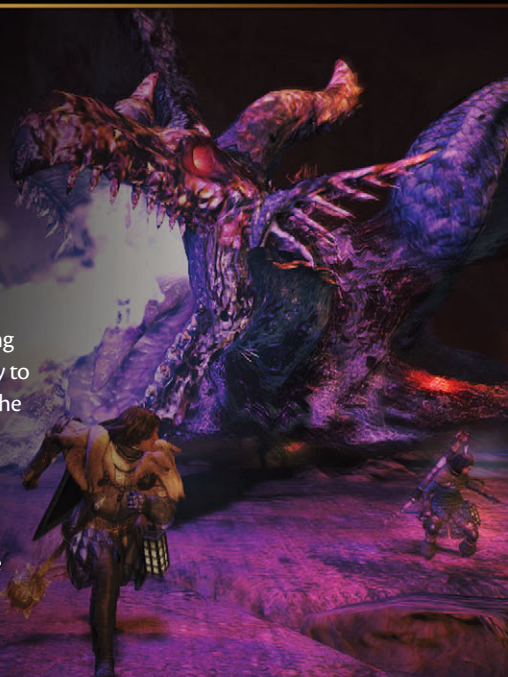
DRAGON'S DOGMA

\$59.99 (360/PS3) • ESRB: (M)ature • Capcom • www.dragonsdogma.com

This is an action-focused open-world RPG that looks uncompromisingly mediocre until you put some effort into it. As the Arisen, you're chosen by a dragon as a unique hero in the world. It does this by taking your beating heart and miraculously leaving you alive and healed. Next up is the game-spanning journey to reclaim said organ while cleaning up the evil around the land of Gransys. Of course, you'll also uncover the meaning of being selected by the dragon.

Playing through Dragon's Dogma reflects shades of Dark Souls and Skyrim, but it's not as good as either. It does manage to hold up well in core gameplay aspects of combat and open world exploration, respectively, when compared to those games. Gameplay is traditional in many ways, but we liked the innovative Pawn system that lets you bring avatars from other players to fight alongside with you. These pawns, including yours, can bring items back to their creator's worlds.

Combat is consistently challenging, and you can expect to die often. But if you love core gamer RPGs then Dragon's Dogma is just what the wizard ordered. ■



One For The RPG Core

—by Dr. Malaprop



MINECRAFT

XBOX 360 EDITION

Creepers Come To The ConSsssssole

—by Andrew Leibman

\$20 (360) • ESRB: (E)veryone • 4J Studios & Mojang • www.minecraft.net

Minecraft has come a long way since we started playing back in September 2010. Minecraft: Xbox 360 Edition, much like the Pocket Edition before it, is a truncated version of the PC experience. Based on a tweaked 1.66 beta build, this version lacks many of the adventure elements that the current PC version features, including pistons, strongholds, NPC villages, Creative Mode, Endermen, and the Ender Dragon, but most if not all of those elements will be coming in future updates.

4J Studios, the team that handled the port, dramatically simplified crafting for this version. You essentially carry with you a recipe book for crafting everything in the game; if you have the requisite ingredients, you can craft anything by tapping the A button. Although this makes Minecraft significantly more approachable and couch-friendly, experienced players may miss the methodical arranging of elements on a 3 x 3 grid.

Once we got over what's missing and what's been added, we settled right in to our new, albeit smaller, world. The joy of discovery and the creative freedom to build whatever occurs to us is still there, and it never gets old. Consider the inclusion of four-person multiplayer icing on a square cake. ■

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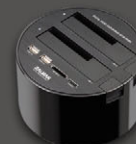
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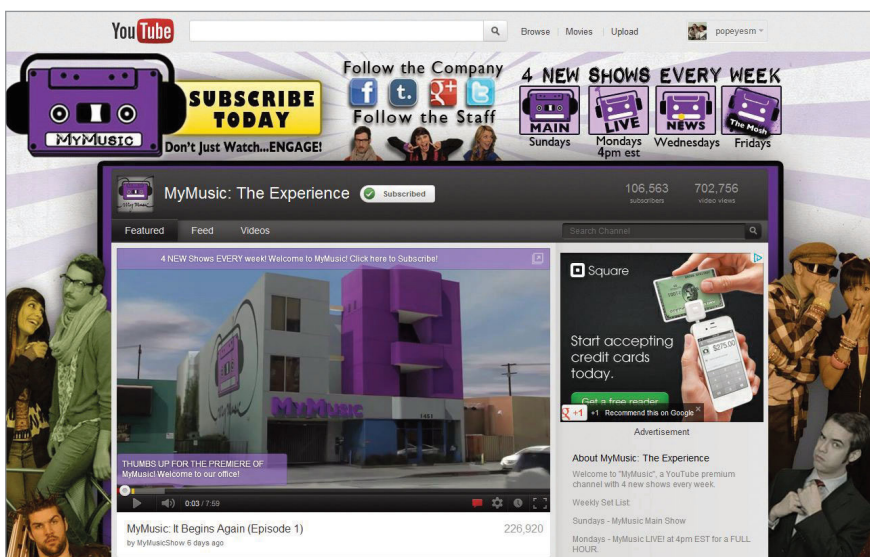
What's On YouTube Tonight?

YouTube Channels Tune In For A More TV-Like Future

After six or seven years of distributing videos of piano-playing cats and lame-brained kids riding their bikes off of roofs, YouTube wants to grow up. The Google-owned video portal is responsible for billions of video views a month, but its user experience has always been closer to that of a search engine than the TV mimicked in its own logo. The interface was great for having that random chuckle while browsing or sharing “gotta see this” clips with friends. But in a nod to traditional TV, the former upstart of the video scene is hoping that visitors will lean back and come to YouTube for more original, well-produced content that is organized in familiar TV fashion.

In late 2011, YouTube announced a new content initiative to bring original programming to more than 100 “Channels” that would be organized by topic and put out regularly scheduled content specifically for YouTube. Channels from WWE, The Onion, eHow, and Channel Frederator were available at launch. According to reports, Google’s video arm was expected to invest more than \$100 million in incentives and had attracted talent from TV shows like “The Office” and “CSI,” as well as luminaries such as Madonna, Ashton Kutcher, and Jay-Z.

Channels, shows, and brand-specific pages have long been a part of the YouTube experience, of course. But this new structure, supported by a late 2011 site redesign, represents the next major version of a portal that streams more than 15 billion videos a month to 145 million unique users, according to comScore’s March count for Google-owned video properties (primarily YouTube). “We are trying to create an



Using incentives from YouTube and its premium channel program, popular YouTube comedians The Fine Brothers finally got a shot at crafting a regularly scheduled online sitcom, MyMusic.

ecosystem where we bring new content creators and folks who have had experience creating content on other media to YouTube,” says YouTube spokesperson Jacques Hebert. Partners new and old are pitching to YouTube ideas for new programming in order to get into the channel partner program. The portal re-launched in December with a more prominent channel structure that lets visitors explore categories like How To, News & Politics, Spanish Language, and Vlog Stars. And the channels with original programming often will be introducing new content on declared schedules. YouTube says that having content appear online according to a TV-like routine has proven successful with many of the

pro-amateur vlog stars that YouTube has created over the years, and it is becoming a central part of many of the new channels.

One other big difference in this push for improved online video content is that YouTube is helping to fund development by giving producers advances on the ad revenues these channels will generate down the line. Viral videos of talking animals and epic fails can generate millions of views for YouTube but not much ad revenue. Traditional, big-spending advertisers like auto manufacturers and packaged goods makers are used to buying TV spots around professionally crafted, regularly scheduled, and reliably inoffensive content. Those buying habits have not translated well to a world of wildly

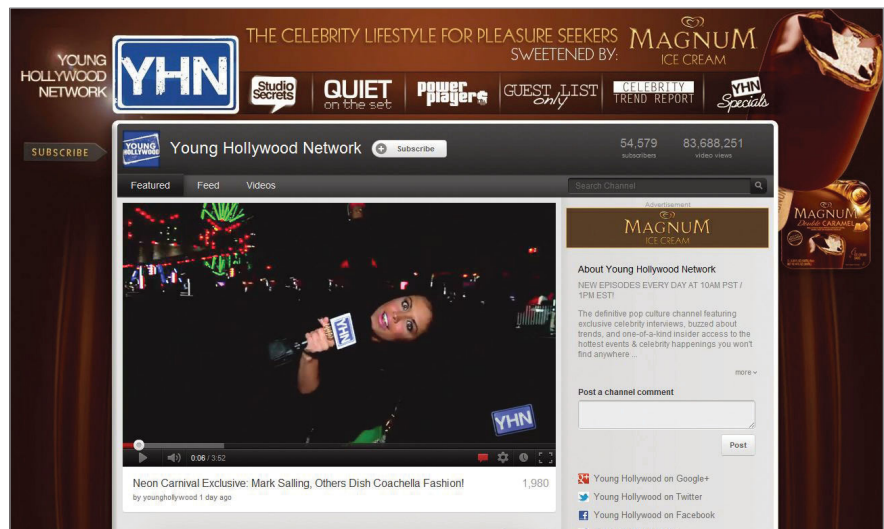
popular viral hits of unpredictable quality that hit the Web randomly. YouTube rival Hulu, for instance, has been very successful in capturing traditional ad money with its more familiar time-shifted TV content. By crafting more predictable schedules full of polished content, YouTube is hoping to sell Madison Avenue on a more TV-like environment—and is willing to split the revenues with these original content creators.

While specific deals vary, YouTube is helping some of these content creators build new shows and facilities with advances on ad revenue. The company points to Young Hollywood Network, which relies on posting the latest entertainment industry buzz. As an independent outlet working through YouTube, it was hard for them to get the videos fed into the YouTube system in a timely manner that scooped other, better-funded news outlets. “Now they built a facility dedicated to uploading video and hired people so they have a better chance of breaking news,” Hebert says.

YouTube funding is not trivial, says Sara Penna, co-founder of Big Frame, a company that manages relationships between YouTube stars and major consumer brands and has launched the Bammo premium channel. “One example of how the model worked really well for us is with Sync,” she says. This action adventure set in 2025 has polished editing, professional actors, and elaborate pyrotechnics. “It was a concept that Sam [Gorski] and Niko [Pueringer] from Corridor Digital had for a long time and weren’t able to complete without the budget and production team we were able to provide them because of the YouTube incentives.”

YouTube Rebooted

The new funding and opportunity to re-think video content on the web is encouraging traditional players to come up with new combinations of content. The 3V channel was created by Rodale, the publishers of *Men’s Health* and *Prevention* magazines, with BermanBraun, makers of the Syfy series “Alphas.” “There were a lot of partners who pitched a lot of channels



Above: While Young Hollywood Network gets new facilities for uploading up-to-the-minute videos on breaking entertainment news, YouTube gets reliable content that attracts bigger advertisers.



Left: YouTube gets a sci-fi action adventure series in Corridor Digital’s “Sync,” set in 2025.

to Google,” says Matt Bean, VP of product development at Rodale. “We saw that our fitness channel idea resonated with them.” More than just a catalog of workout videos, 3V has created shows like YouCube, where a fictional office fitness vlogger offers exercises to the deskbound but interacts with a cast of comical colleagues. Fitness Fail highlights the zaniest user-uploaded bloopers and epic fails involving exercise. These are not the typical video shows one expects from a fitness and health magazine company, Bean admits, but the YouTube project is letting legacy media explore new terrain.

Some of the old YouTube favorites are also getting refreshed and redirected by the new push for original programming. The

ever-popular Fine Brothers (1.4 million subscribers and 250 million video views) have been crafting spoofs and series like “Kids React” for a number of years, but never had the opportunity or funding to follow their desire to produce situation comedy. The new Fine Brothers MyMusic channel is a satire series divided into four weekly parts about the inner workings of an indie music news YouTube channel.

YouTube sees the original Web content initiative as a way to nurture new talent and let established players explore new paths. Felicia Day, famous for her creation of “The Guild,” founded a new company and premium Geek & Sundry channel that puts her behind the camera as well as in

front of it. Her Flog vlog will still feature the YouTube fave, but an entire slate of programming launched in early April, including “TableTop” (Wil Wheaton and celebrities playing tabletop games), motion comics from Dark Horse, and fantasy/sci-fi author interview show “Sword & Laser.”

While YouTube’s premium channels may echo some of the production values on TV, this is still the web, where interactivity and user input rule. YouTube emphasizes that, while many traditional media figures such as Madonna and “CSI” producer Anthony Zuiker are partnering with the portal, digital platforms do not encourage business as usual. “A lot of the channels that have launched are making quick, real-time decisions,” Hebert says. “These folks can release a pilot and get direct feedback and analytics to see how this is working. They can make quick programming decisions to help them be successful and be in tune with the audience when interacting with them on a regular basis.”

For Big Frame/Bammo, the new premium channels offer a technology platform that can help them grow audiences they will parse and cultivate across other channels, as well. CEO Steve Raymond says that the company already has more than 8 million monthly uniques and monthly video views of about 100 million for its partners like DeStorm, Mike Diva, and MysteryGuitarMan. “We are very focused on raising advertising revenue on the network,” he says. And as each of these artists gains even larger followings across social networks, the company can develop new products and revenue streams from them. Co-founder Penna says that the premium channels model is letting companies like hers that were born out of the first stages of YouTube’s success be part of the next stage. “We are taking an early stake in this space. With the support from YouTube in terms of technology infrastructure, analytics, and programs like these premium channels, we are able to run our business and help shape where the industry will go.” ■

Mondo Goes Mega

Mondo Media has been making animated web shorts for nearly a decade, going back to pre-YouTube sensations such as “The God & Devil Show” and “Thugs On Film.” More famous now for their cross-platform success “Happy Tree Friends,” Mondo was among the first companies YouTube chose for a channel partnership. Aaron Simpson, VP of animation and business development at Mondo, tells us how the new structure changes approaches to programming.

CPU: How much is Mondo material viewed now, and what are the primary platforms on which it is consumed?

Simpson: For starters, our collected network of channels on YouTube is at a 50 million views a month run-rate, led by two monster shows. Mondo also has a top-10 iTunes podcast, and the “Happy Tree Friends” TV series continues to be seen in over 50 television markets worldwide.

CPU: Mondo has been churning out content across a multitude of channels for almost a decade. What does having your own channel on YouTube change for you?

Simpson: Early on, we had a hunch that YouTube could be a game-changer, and we loaded our library in and held on tight through massive growth. Now, with over a million subscribers on our main channel, we’re able to attract partnerships, both creatively and otherwise, that we couldn’t have in the past. The channel has become a bit of a beacon in the animation and comedy markets, and we intend to keep that fire lit!

CPU: What new programming can we expect from the group on this platform?

Simpson: You might want to clear your social calendar, because we’ve just begun rolling out the first of 65 all-new animated pilots this year, which will result in over 300 total new episodes. Beyond that, we’re just putting the finishing touches on “Aachi & Ssipak,” a 2006 animated feature we re-wrote, re-cast, and re-scored. The new cut was directed by Ed Skudder and Zack Keller. It’s a partnership between Mondo Media, Lionsgate, and YouTube.

CPU: Are you thinking about a content mix now or a schedule of regular releases in a way you might not have in the past?

Simpson: In 2000, we had a similar roll-out model as we do now—we’re programming launches well in advance and keeping a rather rigid schedule to help our audience better track their favorite series.

CPU: What kind of usage are you seeing on mobile devices now? Does the YouTube channel structure make your content more accessible on devices?

Simpson: Mobile video viewing is skyrocketing, and YouTube continues to improve both the end-user experience, as well as the business model around the mobile platform. It may be months, not years, before we’re seeing up to half of our views are coming from devices and tablets.

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Max length space available for PCI slots	295mm
I/O Ports	1x USB 3.0 / 3x USB2.0 / Audio+Mic



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Drive Bays	4x 5.25" (Exposed) / 10x 3.5" HDD or 2.5" HDD / 1x 3.5"+2.5" HDD hot swap slot
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PDXLAN 20 - Portland, OR

www.pdxlan.net

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Naois Gaming - York, PA

www.naoisgaming.com

NGC's LAN-A-GEDDON -
Greenville, TX

www.networkgamingclub.com

Oklahoma Gamers Group -
Oklahoma City, OK

www.okgg.org

08.02-05.12

MillionManLan 11 - Louisville, KY

[www.lanwar.com/LWEventHome.
asp?EventID=125](http://www.lanwar.com/LWEventHome.asp?EventID=125)

Quakecon 2012 - Dallas, TX

www.quakecon.org

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WV Gamers - Eugene, OR

www.wvgamers.com

08.18.12

NGC's LAN-A-GEDDON -
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Aoi Uma Con - Louisville, KY

NostalgiaConventions.com

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BHN LAN - Largo, FL

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www.pdxlan.net

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Q&A With Charles Zhang

Logisys' Founder

Talks Lighting & Remote Control

Q How long has Logisys been making PC products, and can you tell us a little about your company's mission and/or goals?

CZ Logisys has been making PC products by its own name since 2001. Our goal is to provide PC gamers and modders all of the accessories made with meticulous attention to consistency and quality to cater to today's fast-changing market.

Q Logisys makes a lot of parts, but seems to have placed special emphasis on lighting and controls. How did Logisys choose these areas, and in what ways has your company differentiated its products from others in the marketplace?

CZ We were inspired by the talented gamers, modders, and enthusiasts who were not only from the PC industry, but also from other fields, such as automobile and bicycle modders, home decoration contractors, etc. Our 12VDC LED and CCFL lighting in a wide variety of colors, sizes, shapes, and forms has an edge against our competitors in the marketplace.

Q How has the emergence of LEDs changed PC lighting in general? Do you see CCFLs being replaced completely at some point, or will there always be a place for them?

CZ LED lighting has become more and more popular due to its energy efficiency. However, CCFL lighting is still being used because of its

color sharpness, non-directional lighting, and cost effectiveness.

Q Your lighting product lines include products in a wide variety of colors. Do you ever receive requests for colors that you don't already make, and what would you say is the most popular color in your lineup?

CZ We do get requests for colors that are not already in our product line, and we are glad to make it for those customers. We stock the most popular colors such as blue, green, red, white, purple, and UV. Our most popular color would have to be blue.

Q Logisys offers an impressive list of remote control units for PCs. What kinds of functions can these units control, and how difficult are they to install?

CZ We have many 12VDC remote switches. They primarily function as On and Off single-zone or multiple-zone remote switches, in either latch or momentary mode. We also have some lighting pattern remote switches that go hand in hand with our lighting products. The installation is fairly easy, as all wires are clearly labeled.

Q Your site mentions special customizations to remote control units that customers can order. Can users make some of these customizations on their own after purchasing Logisys remote control units?

CZ We customize remote controls for special projects or customers



who have specific requirements. Users can make modifications to some extent, but we encourage the customer to contact us for special customization should they require special needs.

Q What's next for Logisys? Do you have any new products coming for the remainder of 2012 that you can talk about?

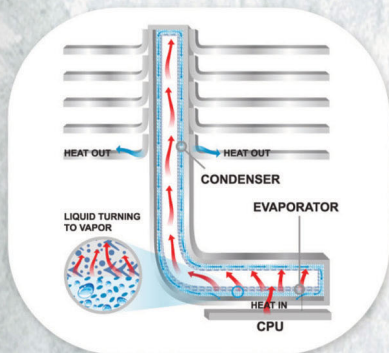
CZ Our customers and friends inspire us to continue to think outside the box and be creative. They are the driving forces that move us forward. We had a 5.25-inch multifunctional remote control front panel unit back in 2002 that was discontinued, which had the ability to remotely turn on and off your computer. Due to the demand for the remote function, we are going to extract the idea from that unit and make a dedicated PC remote controller. We will be releasing this product in the coming month. Aside from that, Logisys is in the dominant position for entry-level PC power supplies. We plan on expanding and improving that line, bringing in more power-related adapters, converters, and more. ■



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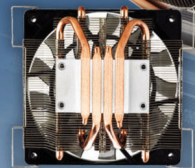
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